DYNAMIC MESSAGE SIGNS
POTTAWATTAMIE Co. ITS-080-1(359)7--25-78
LETTING DATE 06/15/10

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Iowa Department of Transportation
*Highway Division*

PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM

# POTTAWATTAMIE COUNTY

DYNAMIC MESSAGE SIGNS

Just W. of US 6

| TOTAL |
|---|
| 20 |
| PROJECT IDENTIFICATION NUMBER |
| 10-85-035-010 |
| PROJECT NUMBER |
| ITS-080-1(359)7--25-78 |

For Standard Road Plans
Refer to Sheet No. C.04

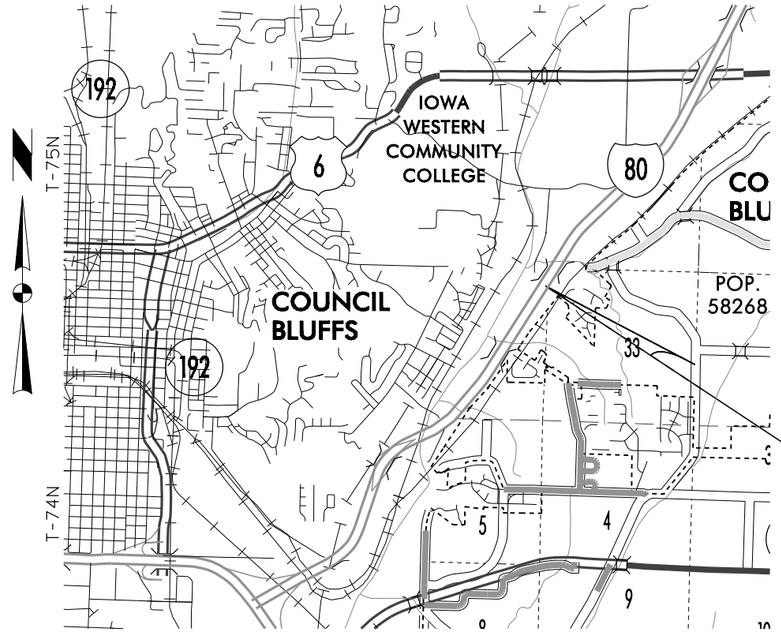
The Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, series 2009, plus General Supplemental Specifications; and applicable Supplemental Specifications, Developmental Specifications, and Special Provisions, shall apply to construction on this project.

Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

NO MILEAGE SUMMARY

## INDEX OF SHEETS






DMS 110
I-80 EASTBOUND
STA. 143+00
M.P. 6.89

LOCATION MAP SCALE
0 0.5 1 1.5
Miles

| INDEX OF SEALS | | |
|---|---|---|
| SHEET NO. | NAME | TYPE |
| A.01 | John M. Narigon | Primary Signature Block |
| | | |
| V.1 | James R. Hauber | Structural |
| | | |
| | | |
| | | |
| | | |

LICENSED PROFESSIONAL ENGINEER
John M. Narigon
11842
IOWA

I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — Date 04/05/09
John M. Narigon
Printed or Typed Name

My license renewal date is December 31, 2011

Pages or sheets covered by this seal:
A.01, B.01-B.03,C.01-C.04,N.01,X01

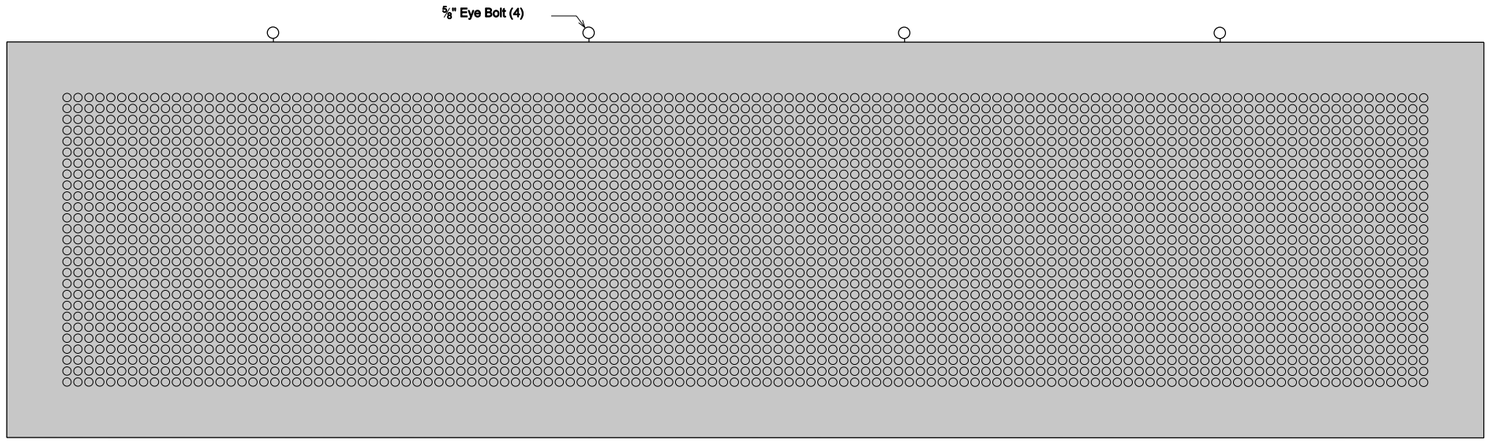
| IOWA DEPARTMENT OF TRANSPORTATION | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM NARIGON | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER A.01 |
|---|---|---|---|---|---|

5/4/2010 jnarigo W:\Projects\8503501010\TrafEng\Signing\25-78-0801-359\78080359_a01.sht

## DIMENSIONAL INFORMATION

Type: Full Matrix
Pixels: 125 x 27 (width x height)

Max. Height: 8'0"
Max. Width: 30' 0"
Max. Depth: 4'0"
Max. Weight: 4000 lbs




## STORAGE LOCATION

Iowa Department of Transportation
Ames Maintenance Facility
57073 E. US 30
Ames, IA 50010

Phone: (515) 232-8226

## TRANSPORTATION REQUIREMENTS

All material and equipment necessary to transport the sign to or from the storage site shall be furnished by the Contractor.

The sign shall be transported in the upright posititon. At no point in time shall the sign be laid on its side, front, or back.

To avoid damage to the sign during tranport, consult the sign manufacturer to determine the correct method to secure the sign to the trailer. Any damage incurred duing transportation shall be the responsibility of the Contractor.

## STORAGE REQUIREMENTS

All material and equipment necessary to store the sign at the designated site shall be furnished by the Contractor.

The sign shall be stored upright and level. At no point in time shall the sign be laid on its side, front, or back.

The sign must be blocked up at least three inches from the ground. When the sign is not stored on concrete, extra blocking should be used to provide for settlement.

To avoid damaging the bottom skin of the housing, blocking shall be placed directly beneath the sign's internal structural supports.

Remove all blocking from the DMS after installation on the sign truss.

During transportation and storage, the DMS shall be secured at all times to prevent tipping. The DMS shall be secured with dead man anchors or other suitable methods. Ensure that the DMS is not marred by the selected method. Tipping may be caused by any number of reasons, but high winds and other weather related events are the primary concern while the DMS is on the ground.

Any damage resulting from the failure to properly secure the DMS shall be the responsibility of the Contractor.

## ATTACHMENT HARDWARE

All materials necessary to attach the DMS to the support structure will be furnished with the DMS.

Dry fit the DMS to the sign truss to determine the actual attachment bracket locations. Adjust the brackets to avoid conflicts between the U Bolts and the internal members of the sign truss. Drill the bolt holes in the Z bracket on the back of the DMS after conflicts are resolved.

After installation of the DMS onto the truss, ensure that all unused hardware (bolts, nuts, washers, etc), construction materials, tools and such are removed from the structure. The Contractor is liable for any damages that result from materials falling into traffic.

## LIFTING REQUIREMENTS

The following procedures should be followed when lifting the sign for either removal or installation. This includes lifting the sign from the storage site to the trailer or the reverse, and from the trailer to the support structure or the reverse.

The Contractor shall provide all equipment necessary to lift the DMS.

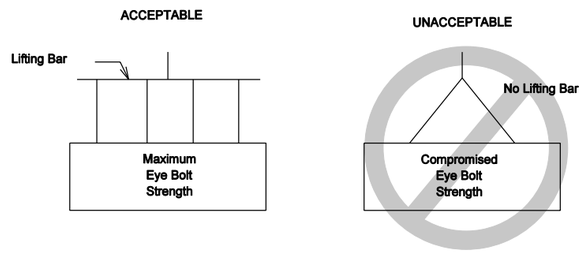
The crane and lifting bar shall be rated to lift the weight of the sign.

Any damage incurred during lifting shall be the responsibility of the Contractor.

Consult the manufaturer for complete lifting requirements.

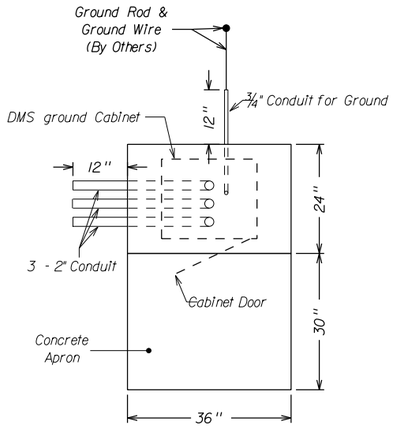
The eyebolts used to lift the sign shall be furnished by the Contractor.
The rated load of the eyebolts shall not be exceeded.
Consult manufacturer for specific information about the eyebolts.

The figures illustrate the correct (left example) and the incorrect (right example) method of lifting a sign. Lift the sign with the lifting bar as shown on the left. Use every lifting point (eyebolt) provided. Not doing so may cause the eyebolts to fail.

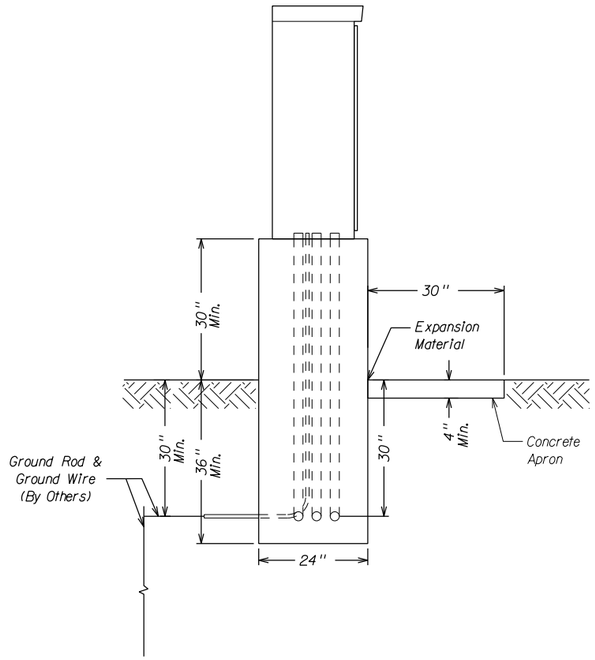



After installation, plug and seal the eyebolt openings as per the manufacturer's requirements. Any damage incurred by improperly sealed openings shall be the responsibilty of the Contractor.

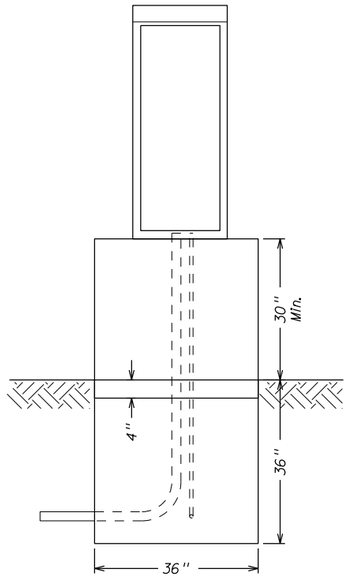
# LARGE DYNAMIC MESSAGE SIGN TYPICAL DIMENSIONS AND CARE AND HANDLING REQUIREMENTS




Top View




Side View




Front View

Center DMS Cabinet on footing and attach with pull out anchors. Refer to IM 453.09 for approved anchors.

Center conduits in the footing. Prior to pouring the footing, confirm that no conflicts exist between the conduit placement and the ground cabinet. Maintain at least 2" of clearance to the edge of the ground cabinet.

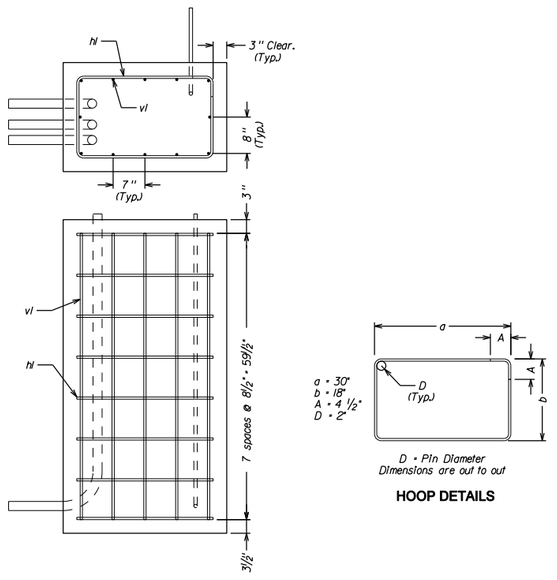
Cap all open ends of conduit before backfilling. For future reference, mark the locations of all conduit entering the footing on the side which the conduit enters. Locate marks near the top to ensure they remain visible after backfilling and shaping.

Install socket type bell ends on conduit protruding from the footing. Finished conduit (including bell end) is to protrude 5 to 6 inches from the top of footing.

Use Class C Structural Concrete for the footing. Meet the requirements of section 2403 for placement of the concrete. The top of the footing is to be level, and the top edges rounded with an edger. Provide forms of sufficient strength to prevent warping, bulging, or other deflections.

Epoxy coated reinforcement to meet the requirements of section 2404.

Conduit, excavation, backfilling, and site restoration to meet the requirements of section 2523.







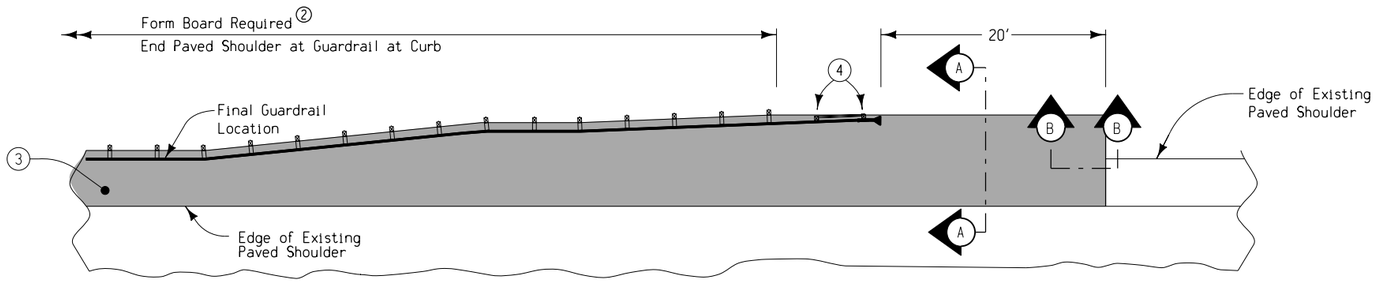
HOOP DETAILS

Reinforcing Details

| EPOXY COATED REINFORCEMENT QUANTITIES per footing | | | | |
|---|---|---|---|---|
| BAR | QTY | SIZE | LENGTH | WEIGHT |
| v1 | 12 | #4 | 59½ | 39.8 |
| h1 | 7 | #4 | 105 | 46.7 |
| Total Weight | | | | 86.5 |

| CONCRETE QUANTITIES per footing location | |
|---|---|
| Footing | 1.22 cu yd |
| Pad | 0.09 cu yd |

# DMS GROUND CABINET FOOTING DETAILS




| Location | | | | Ⓟ | Subgrade① Treatment | | Paved Shoulder | Remarks |
|---|---|---|---|---|---|---|---|---|
| Road Identification | Station To Station | | Side | Feet | Special Backfill Tons | Modified Subbase CY | SY | |
| I-80 | 141+77 | 143+50 | 0 | 13.5 | 43 | | 120 | |
| | 142+16 | 143+65 | M | 16.0 | 55 | | 156 | |

6" HMA Paved Shoulder at guardrail. 7" PCC may be substituted pending approval of jointing layout.

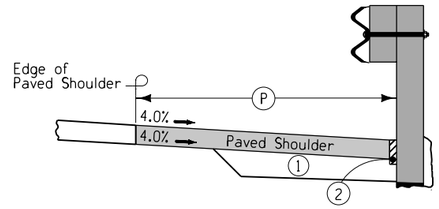
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal & reinstallation of guardrail will be allowed with no additional payment.

(1) 6" subgrade treatment.

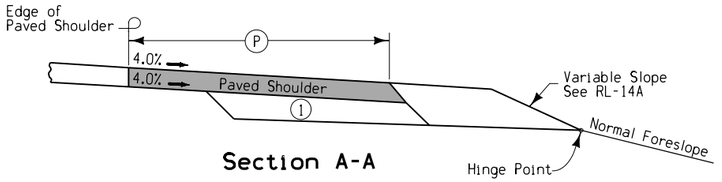
(2) When guardrail posts are installed prior to construction of paved shoulder, nail 1" x 6" untreated form boards along the face of guardrail posts for the length shown. This board is to prevent shoulder material from contacting the sides of the posts and altering the function of the guardrail. Form board not required for final 2 posts.

(3) Continue paved shoulder to existing paved shoulder or 20' beyond the end of guardrail.

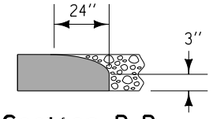
(4) Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement.




Typical Section with Form Board




Section A-A




Section B-B
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL

## STANDARD ROAD PLANS

105-4
04-20-10

The following Standard Road Plans shall be considered applicable to construction work on this project.

| Number | Date | Title |
|---|---|---|
| BA-200 | 04-20-10 | Steel Beam Guardrail Components |
| BA-201 | 04-20-10 | Steel Beam Guardrail Barrier Transition Section |
| BA-202 | 04-20-10 | Steel Beam Guardrail Bolted End Anchor |
| BA-203 | 04-20-10 | Steel Beam Guardrail W-Beam End Anchor |
| BA-205 | 04-20-10 | Steel Beam Guardrail End Terminal |
| BA-250 | 04-20-10 | Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post |
| BA-401 | 04-20-10 | Temporary Barrier Rail (Precast Concrete) |
| BA-500 | 04-20-10 | Temporary Crash Cushions Sand Barrel |
| RM-42 | 04-20-10 | Precast Handhole |
| SI-173 | 04-20-10 | Object Markers |
| SI-211 | 04-20-10 | Object Marker and Delineator Placement with Guardrail |
| TC-1 | 10-17-06 | Work Not Affecting Traffic |
| TC-402 | 04-20-10 | Shoulder Closure (Multi-Lane) |
| TC-418 | 04-20-10 | Lane Closure on Divided Highway |
| TC-451 | 10-21-08 | Temporary Road Closure on Divided Highway |

## ESTIMATED PROJECT QUANTITIES

| ITEM NO. | ITEM CODE | ITEM | UNIT | TOTAL | AS BUILT QUAN. |
|---|---|---|---|---|---|
| 1 | 2102-0425070 | SPECIAL BACKFILL | TON | 98.0 | |
| 2 | 2102-2625000 | EMBANKMENT-IN-PLACE | CY | 120.0 | |
| 3 | 2122-5500060 | PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN. | SY | 276.0 | |
| 4 | 2401-6745355 | REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS | EACH | 8 | |
| 5 | 2401-6745910 | REMOVAL OF SIGN | EACH | 4 | |
| 6 | 2402-2720000 | EXCAVATION, CLASS 20 | CY | 200 | |
| 7 | 2403-0100000 | STRUCTURAL CONCRETE (MISCELLANEOUS) | CY | 45.6 | |
| 8 | 2404-7775005 | REINFORCING STEEL, EPOXY COATED | LB | 4,614 | |
| 9 | 2505-4008120 | REMOVAL OF STEEL BEAM GUARDRAIL | LF | 231.3 | |
| 10 | 2505-4008300 | STEEL BEAM GUARDRAIL | LF | 125.0 | |
| 11 | 2505-4008400 | STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION | EACH | 2 | |
| 12 | 2505-4021010 | STEEL BEAM GUARDRAIL END ANCHOR, BOLTED | EACH | 2 | |
| 13 | 2505-4021700 | STEEL BEAM GUARDRAIL END TERMINAL | EACH | 2 | |
| 14 | 2526-8285000 | CONSTRUCTION SURVEY | LS | 1.00 | |
| 15 | 2528-8400048 | TEMPORARY BARRIER RAIL, CONCRETE | LF | 340.0 | |
| 16 | 2528-8445110 | TRAFFIC CONTROL | LS | 1.00 | |
| 17 | 2528-8445113 | FLAGGERS | EACH | | |
| 18 | 2528-9290004 | CHANGEABLE MESSAGE SIGNS, PORTABLE | CDAY | 1 | |
| 19 | 2533-4980005 | MOBILIZATION | LS | 1.00 | |
| 20 | 2551-0000110 | TEMP CRASH CUSHION | EACH | 2 | |
| 21 | 2599-9999005 | GALVANIZED OVERHEAD SIGN TRUSS, 70 FT. | EACH | 1 | |
| 22 | 2599-9999005 | OVERHEAD DMS, INSTALL ONLY | EACH | 1 | |

04-15-08 232-3A

EROSION CONTROL: (Rural Seeding)

Following completion of work in a disturbed area, the area shall be seeded, fertilized, and mulched as follows:

SEEDING:

3 lbs. of Fescue or Fawn per 1000 sq. ft.

FERTILIZER:

17 lbs. of 13-13-13 (or equivalent) commercial fertilizer per 1000 sq. ft.

MULCH:

70 lbs. of dry cereal straw per 1000 sq. ft. All mulch shall be consolidated into the soil with a mulch stabilizer.

The preparation of the seedbed and the furnishing and application of seed, fertilizer, and mulch shall be considered incidental to mobilization and no extra compensation will be allowed.

10-22-93 204-4

All guardrail materials that are removed and not reused on this project shall become the property of the contractor. Any material to be used on this project that is damaged due to the carelessness of the contractor shall be replaced at the contractor's expense without cost to the State of Iowa.

01-20-84 204-2

All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles, or foundation studies, shall be filled and consolidated to finished grade as directed by the engineer to prevent future settlement. The voids shall be filled as soon as practical - preferably the day created and not later than the following day. Any portion of the right-of-way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an acceptable condition. This operation shall be considered incidental to other bid items in project.

04-15-08 213-1

**It shall be the contractor's responsibility to provide waste areas or disposal sites for excess material (excavated material or broken concrete) which is not desirable to be incorporated into the work involved on this project.**

**It shall be the contractor's responsibility to ensure that areas (including haul roads) selected for waste or disposal not impact 1) culturally sensitive sites or graves or 2) wetlands or "Waters of the U.S.", including streams or stream banks below the "ordinary high water mark", without an approved U.S. Army Corps of Engineers Section 404 Permit.**

**No payment for overhaul will be allowed for material hauled to these sites. No material shall be placed within the right-of-way, unless specifically stated in the plans.**

01-20-84 232-5

The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service area(s) will be subject to the approval of the resident engineer.

06-22-84 251-2

The contractor is hereby notified that removal of any existing traffic markers, warning devices or guardrail barriers shall be scheduled subject to the approval of the Engineer. The contractor may be required to place temporary warning devices at certain locations where replacement features are not installed the same day during which any such removals take place.

06-22-84 251-3

A plan for stage construction of local accesses which are required to remain open to traffic during construction shall be submitted by the contractor for approval by the engineer.

ESTIMATE OF QUANTITIES,
STANDARD ROAD PLANS,
AND GENERAL NOTES

# ESTIMATE REFERENCE INFORMATION

| ITEM NO. | ITEM CODE | DESCRIPTION |
|---|---|---|
| 1 | 2102-0425070 | SPECIAL BACKFILL<br>REFER TO TYPICAL 7156 |
| 2 | 2102-2625000 | EMBANKMENT-IN-PLACE<br>REFER TO TABULATIONS 107-23 AND 108-30 AND TYPICAL 8210.<br><br>INCLUDES 100 CY FOR GRADING FOR GUARDRAIL, 10 CY FOR BARREL ARRAYS AND 10 CY FOR TBR PLACEMENT ADJACENT TO BRIDGE.<br><br>CONTRACTOR TO PROVIDE MATERIAL. |
| 3 | 2122-5500060 | PAVED SHOULDER, HOT MIX ASPHALT MIXTURE, 6 IN.<br>REFER TO TYPICAL 7156. |
| 4 | 2401-6745355 | REMOVAL OF CONCRETE FOOTINGS OF HIGHWAY SIGNS<br>REFER TO TABULATION 190-62.<br><br>FOOTING SHALL BE REMOVED TO A DEPTH OF 1 FOOT BELOW GROUND. HOLES SAHLL BE BACKFILLED AND RESTORED TO NORMAL SURROUNDING CONDITIONS.<br><br>METHOD OF MEASUREMENT: BY COUNT.<br><br>BASIS OF PAYMENT: EACH. INCLUDES REMOVAL, DISPOSAL AND RESTORATION OF SITE. |
| 5 | 2401-6745910 | REMOVAL OF SIGN<br>REFER TO TABULATION 190-62.<br><br>A SIGN ASSEMBLY CONSISTS OF THE SIGN, ALL AUXILIARY SIGNS AND BRACKETS AND THE STEEL POSTS.<br><br>STEEL POSTS SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ALL OTHER MATERIAL SHALL REMAIN THE PROPERTY OF THE DOT AND BE DELIVERED TO:<br><br>IOWA DOT MAINTENANCE GARAGE<br>3540 S EXPRESSWAY<br>COUNCIL BLUFFS, IOWA<br><br>CONTACT DICK MATTOX (712-366-0332) 48 HOURS BEFORE DELIVERY OF THE MATERIAL.<br><br>THE CONTRACTOR SHALL UNBOLT ALL EXTRUDED ALUMINUM PANELS, BRACKETS AND POSTS FROM EACH OTHER, AND DELIVER THE MATERIALS TO THE COUNCIL BLUFFS NORTH MAINENANCE FACILITY. CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE DISASSEMBLED MATERIALS.<br><br>METHOD OF MEASUREMENT: BY COUNT.<br><br>BASIS OF PAYMENT: EACH. INCLUDES REMOVAL, DISASSEMBLY, DISPOSAL AND DELIVERY. |
| 6 | 2402-2720000 | EXCAVATION, CLASS 20<br>REFER TOTABULATION 190-52. |
| 7<br>8 | 2403-0100000<br>2404-7775005 | STRUCTURAL CONCRETE (MISCELLANEOUS)<br>REINFORCING STEEL, EPOXY COATED<br>REFER TO TABULATION 190-52 AND THE "V" SHEETS. |
| 9 | 2505-4008120 | REMOVAL OF STEEL BEAM GUARDRAIL<br>REFER TO TABULATION 110-7A. |

# ESTIMATE REFERENCE INFORMATION

| ITEM NO. | ITEM CODE | DESCRIPTION |
|---|---|---|
| 10<br>11<br>12<br>13 | 2505-4008300<br>2505-4008400<br>2505-4021010<br>2505-4021700 | STEEL BEAM GUARDRAIL<br>STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION<br>STEEL BEAM GUARDRAIL END ANCHOR, BOLTED<br>STEEL BEAM GUARDRAIL END TERMINAL<br>REFER TO TABULATION 108-8A. |
| 14 | 2526-8285000 | CONSTRUCTION SURVEY<br>- - |
| 15 | 2528-8400048 | TEMPORARY BARRIER RAIL, CONCRETE<br>REFER TO TYPICAL 8210. |
| 16 | 2528-8445110 | TRAFFIC CONTROL<br>REFER TO TABULATION 108-23. |
| 17<br>18 | 2528-8445113<br>2528-9290004 | FLAGGERS<br>CHANGEABLE MESSAGE SIGNS, PORTABLE<br>PER TC-451. |
| 19 | 2533-4980005 | MOBILIZATION<br>- - |
| 20 | 2551-0000110 | TEMP CRASH CUSHION<br>REFER TO TABULATION 108-30. |
| 21 | 2599-9999005 | GALVANIZED OVERHEAD SIGN TRUSS, 70 FT.<br>REFER TO TABULATION 190-52 AND THE 'V' SHEETS.<br><br>METHOD OF MEASUREMENT : BY COUNT.<br><br>BASIS OF PAYMENT: EACH. PAYMENT INCLUDES FURNISHING ALL MATERIALS, EQUIPMENT, TOOLS, AND LABOR NECESSARY TO COMPLETE THE FABRICATION ANDINSTALLATION OF THE TRUSS, INCLUDING THE RUNWAY AND LADDER. |
| 22 | 2599-9999005 | OVERHEAD DMS, INSTALL ONLY<br>REFER TO TABULATION 190-52 AND 'V' SHEETS.<br><br>WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, AND MATERIALS TO CONSTRUCT AND DYNAMIC MESSAGE SIGN (DMS), GENERALLY INCLUDING, BUT NOT LIMITED TO:<br>- ATTACHMENT OF THE DMS TO THE SUPPORT STRUCTURE<br>- CONSTRUCTION OF THE GROUND CABINET FOOTING<br>- INSTALLATION OF AN RM-38 JUNCTION BOX<br>- INSTALLATION OF THE CONDUIT BETWEEN THE SIGN SUPPORT STRUCTURE FOOTING AND THE GROUND CABINET FOOTING<br>- INSTALLATION OF THE GROUND CABINET<br>- TRANSPORT DMS AND ASSOCIATED APPURTENANCES FROM STORAGE AREA<br><br>THE FOLLOWING ITEMS WILL BE PROVIDED BY THE DOT OR THE DMS VENDOR: DMS, DMS-TO-SIGN SUPPORT STRUCTURE ATTACHMENT HARDWARE, AND GROUND CABINET.<br><br>THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THE DOT FURNISHED MATERIALS PRIOR TO ACCESSING THEM. THIS ASSUMPTION OF RESPONSIBILITY SHALL BE DOCUMENTED WITH AN ITEMIZED INVOICE CLEARLY IDENTIFYING EACH ITEM AND SHALL BE SIGNED AND DATED BY THE CONTRACTOR AND THE ENGINEER. LACKING A SIGNED INVOICE, THE DEFAULT DATE OF ASSUMPTION OF RESPONSIBILITY FOR THESE MATERIALS SHALL BE THE DATE THE CONTRACT BETWEEN THE DOT AND THE CONTRACTOR IS SIGNED. UPON THE ASSUMPTION OF RESPONSIBILITY FOR ANY AND ALL MATERIALS, THE CONTRACTOR SHALL BE WHOLLY LIABLE FOR SAFE HANDLING, STORAGE, AND INSTALLATION OF THE EQUIPMENT. ANY DAMAGED EQUIPMENT SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE, WITHOUT ADDITIONAL COMPENSATION.<br><br>THE DMS AND RELATED EQUIPMENT ARE STORED IN THE MAINTENANCE GARAGE AT 3540 S EXPRESSWAY, COUNCIL BLUFFS, IA.<br><br>METHOD OF MEASUREMENT: BY COUNT.<br><br>BASIS OF PAYMENT: EACH. THIS PAYMENT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EQUIPMENT (EXCEPT AS NOTED ABOVE) AND LABOR AND FOR THE PERFORMANCE OF ALL WORK NECESSARY, INCLUDING TRANSPORT OF ALL PROVIDED MATERIALS FROM THEIR PRESENT LOCATION, TO PROVIDE THE DMS INSTALLATION. |

# ESTIMATE REFERENCE INFORMATION

## TABULATION OF MATERIALS FOR OVERHEAD SIGN SUPPORT STRUCTURES

190-52
09-25-02

| STRUCTURE TYPE/LENGTH | LOCATION | | DIR OF TRAVEL | INSIDE FOOTING OFFSET (Ft) | OUTSIDE FOOTING OFFSET (Ft) | DIMENSION 'L' | | | FOUNDATION QUANTITIES | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MILEPOST | STATION | | | | INSIDE (Ft) | OUTSIDE (Ft) | | EXCAVATION (CLASS 20) (Cu Yd) | REINFORCING STEEL (Lb) | REINFORCING EPOXY- COATED STEEL (Lb) | STRUCTURAL CONCRETE (Cu Yd) |
| 70 | | 143+00 | WB | 0 | 70 | 6 | 6 | | 106 | | 4614 | 46.56 |

## TABULATION OF EXISTING SIGNS TO BE REMOVED

190-62
08-24-06

| SIGN NUMBER OR DESCRIPTION | LOCATION MILEPOST (approximate) | DIR OF TRAVEL | TYPE "A" SIGN ASSEMBLY (each) (RA) | TYPE "B" SIGN ASSEMBLY (each) (RB) | REMOVE & REINSTALL EXISTING SIGNS TYPE "A" (each) (RR) | REMOVE & REINSTALL EXISTING SIGNS TYPE "B" (each) (RR) | CONCRETE FOOTING (each) (RF) | SUPPORT STRUCTURE & FOOTING (each) (RS) | APPLICABLE SIGNING NOTES | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|
| LOGO - FOOD NEXT EXIT | 6.7 | EB | | 1 | | | 2 | | RB/RF | |
| RAMP LOGO - FOOD | 8.3 (RAMP) | EB | | 1 | | | 2 | | RB/RF | |
| RAMP LOGO - FOOD | 8.5 (RAMP) | WB | | 1 | | | 2 | | RB/RF | |
| LOGO - FOOD EXIT 8 | 9.3 | WB | | 1 | | | 2 | | RB/RF | |

## REMOVE or REMOVE & REINSTALL BEAM GUARDRAIL

110-7A
04-19-05

(1) Lane(s) to which the installation is adjacent.

| Location No. | Location (1) Direction of Traffic | Location Station | Side | Steel Beam Guardrail Remove (Lin. Ft.) | Steel Beam Guardrail Remove & Reinstall (Lin. Ft.) | Posts Remove (No.) | Posts Remove & Reinstall (No.) | End Anchorage Remove (No.) | End Anchorage Remove & Reinstall (No.) | End Anchorage Type | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | 144+28 | O | 56.25 | | 13 | | 1 | | RE-76 | |
| | BOTH | 144+28 | M | 175 | | 32 | | | | | |

## STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE END POST

Refer to BA-200, BA-201, BA-202, BA-205, BA-250, SI-172 and SI-173

108-8A
04-20-10

| Location Point No. | Station and Offset | Layout Lengths VT1 Lin. Ft. | VF Lin. Ft. | VT2 Lin. Ft. | ET Terminal (50.0') Lin. Ft. | Delineators and Object Markers Type | Delineator Type 1 White No. | Object Marker Type 2 OM2-2V No. | Object Marker Type 3 OM-3L No. | Object Marker Type 3 OM-3R No. | Bid Items (1) End Anchor BA-202 Type | Barrier Transition Section BA-201 No. | Steel Beam Guardrail BA-200 Lin. ft. | End Terminal BA-205 No. | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 143+39, 19' RT. | 34.38 | 68.75 | 0 | 50.00 | 3 | | | 1 | | B | 1 | 75 | 1 | |
| | 143+69, 59' RT. | 40.63 | 37.5 | 0 | 50.00 | 3 | | | | 1 | B | 1 | 50 | 1 | |

(1) See Standards for list of materials.

(1) Lane(s) to which the installation is adjacent.
A = Approach
T = Trailing

## GRADING FOR GUARDRAIL INSTALLATIONS

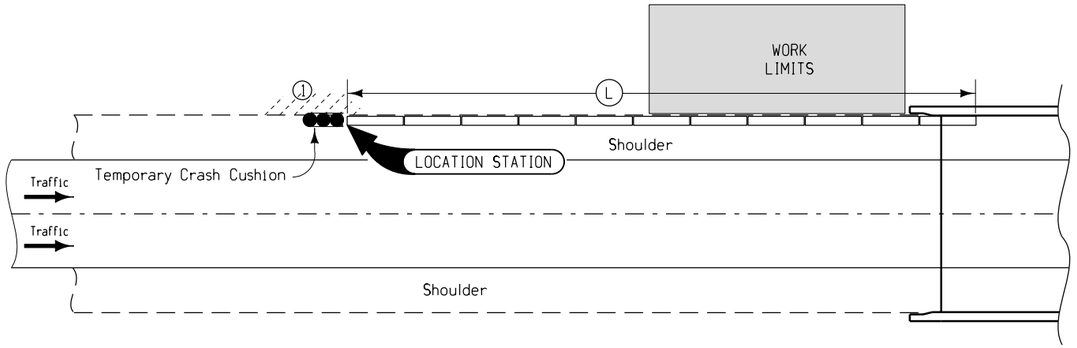
Refer to RL-14A

107-23
04-20-10

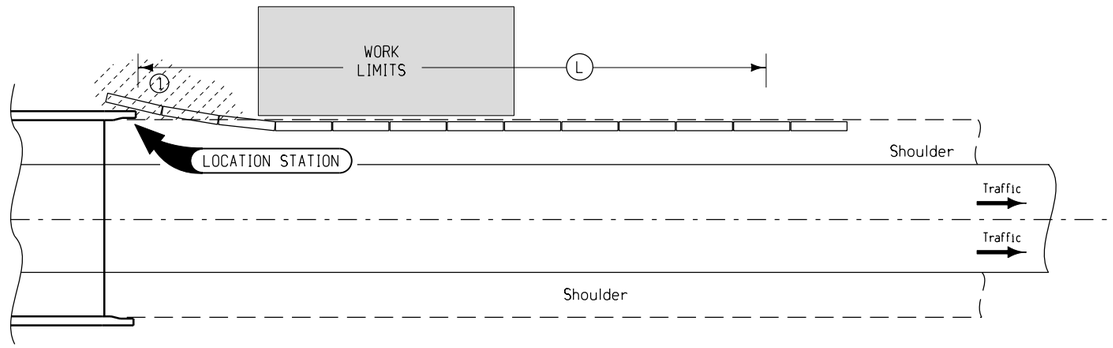
| Location No. | Location (1) Direction of Traffic | Location Station | Side | Standard or Typical Number | Foreslope at Guardrail | Dimensions (Feet) Z A | Z T | X1 | Y1 | X2 | Y2 | X3 | Y3 | X4 | Y4 | Slope in front of Guardrail % | Earthwork Excavation Class 10 CY | Earthwork Embankment in Place CY | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EB | 143+39 | M | | VARIES | 95 | | 35 | 4 | | | | | 150 | 20 | 4 | | 60 | SHAPE MEDIAN TO DRAIN |
| | EB | 143+69 | O | RL-14A | 3:1 | 87 | | 41 | 4 | | | | | 127 | 17 | 4 | | 40 | |

PROJECT TABULATIONS

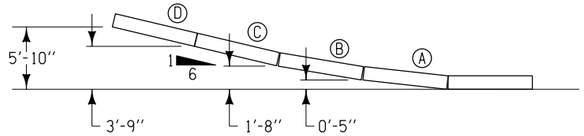
8210
MODIFIED




APPROACH SIDE

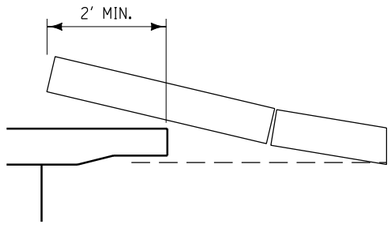



TRAILING SIDE




BARRIER OFFSETS FOR FLARE SECTIONS

PLACE FLARED SECTIONS AS NECESSARY TO ALIGN FIRST SECTION OF TBR BEHIND ENDPOST




(1) EMBANKMENT-IN-PLACE

| Station | Side | Approach | Trailing | (L) |
|---|---|---|---|---|
| | | | | Feet |
| 141+75 | M | X | | 170 |
| 142+05 | 0 | X | | 170 |
| 143+15 | M | | X | 100 |
| | | | | |

# TEMPORARY CONCRETE BARRIER LAYOUT
## for Work near Bridge

## TABULATION OF SPECIAL EVENTS

102-15
10-29-02

| Event | Location | Date(s) |
|---|---|---|
| COLLEGE WORLD SERIES | OMAHA | 06/18/2010 - 06/29/2010 |
| RIVER CITY ROUND-UP | | LATE SEPTEMBER |
| SEPTEMBERFEST | | LATE AUGUST-EARLY SEPTEMBER |
| FIREWORKS DISPLAY | | 07/04/2010 |

## CRASH CUSHIONS

108-30
04-20-10

(1) Lane(s) to which the installation is adjacent.
(2) Complete this section when using the Temporary Crash Cushion bid item. Refer to Standard Road Plan BA-500.

* Bid Item

| No. | (1) Direction of Traffic | Location Station | Side | Obstacle Width | Crash Cushion (Select One)* | | | | | Sand Barrel Details (2) | | | | | Earthwork* | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Temporary | Temporary Redirective | Temporary Severe Use | Permanent | Permanent Severe Use | (V) Length | (W) Length | (X) Length | (Y) Length | (Z) Length | Excavation Class 10 | Embankment in Place | |
| | | | | Feet | | | | | | Feet | Feet | Feet | Feet | Feet | Cu.Yds. | Cu.Yds. | |
| 1 | EB | 141+75 | M | 2 | X | | | | | -2 | 24.25 | 3.25 | 1.25 | 11.5 | | 5 | |
| 2 | EB | 142+05 | 0 | 2 | X | | | | | -2 | 24.25 | 3.25 | 1.25 | 11.5 | | 5 | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | 2 | | | | | | | | | | | 10 | |

## STAGING NOTES

108-26
08-30-88

Stage 1. Close outside eastbound lane. Remove existing guardrail. Place temporary barrier rail and sand barrel array.

Stage 2. Close inside eastbound and westbound lanes. Remove existing guardrail. Place TBR and sand barrel array.

Stage 3. Construct embankment. Construct sign truss footing, place sign truss, and place DMS.

Stage 4. Remove TBR. Place new guardrail. Place new HMA shoulder.

## TRAFFIC CONTROL PLAN

108-23
04-04-89

Traffic shall be maintained on I-80 at all times.

Lane closures will be allowed only during the following times:
10:00 pm (Sunday - Thursday) to 6:00 am (Monday - Friday)
10:00 pm Friday to 8:00 am Saturday
10:00 pm Saturday to 10:00 am Sunday

Lane closures will not be allowed during the College World Series.

To set the sign truss and DMS, eastbound I-80 may be closed during the night between the hours of 10:00 pm and 6:00 am for a period of up to 30 minutes each occurrence.

STAGING AND TRAFFIC CONTROL TABULATIONS AND DETAILS

141+00

142+00

143+00

REMOVE EXISTING GUARDRAIL

SHAPE TO DRAIN

PAVED SHOULDER AT GUARDRAIL

PROPOSED GUARDRAIL

℄ I-80 EB

CENTER DMS OVER ROADWAY

REMOVE EXISTING GURADRAIL

PROPOSED GUARDRAIL

PAVED SHOULDER AT GUARDRAIL

DMS CONTROL CABINET

RM-42 HANDHOLE

0 FEET 10

# SITE DETAILS

| | | | | | |
|---|---|---|---|---|---|
| IOWA DEPARTMENT OF TRANSPORTATION | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM NARIGON | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER N.01 |

5/4/2010 jnarigo W:\Projects\8503501010\TrafEng\Signing\25-78-0801-359\78080359_N01.sht

# ANCHOR BOLT NOTES:

PROCEDURE FOR TIGHTENING ANCHOR BOLT NUTS ON OVERHEAD SIGN TRUSS.

1) THIS WORK SHALL BE PERFORMED ONLY ON DAYS WITH WINDS LESS THAN 15 MPH. ALL TIGHTENING OF THE NUTS IS TO BE DONE IN THE PRESENCE OF THE INSPECTOR. ONCE THE TIGHTENING PROCEDURE IS STARTED IT MUST BE COMPLETED ON ALL OF THE BASE PLATE NUTS WITHOUT PAUSE OR DELAY.

2) PROPERLY SIZED WRENCHES DESIGNED FOR TIGHTENING NUTS AND/OR BOLTS SHALL BE USED TO AVOID ROUNDING OR OTHER DAMAGE TO THE NUTS. ADJUSTABLE END OR PIPE WRENCHES MAY NOT BE USED.

3) BASE PLATE, ANCHOR RODS AND NUTS ARE TO BE FREE OF ANY DIRT OR DEBRIS.

4) APPLY STICK WAX OR BEES WAX TO THE THREADS AND BEARING SURFACES OF THE ANCHOR BOLT, NUTS, AND WASHERS.

5) TIGHTEN TOP NUTS SO THEY FULLY CONTACT THE BASE PLATE. TIGHTEN LEVELING NUTS TO SNUG TIGHT CONDITION. SNUG TIGHT IS DEFINED AS THE FULL EFFORT OF ONE PERSON ON A WRENCH WITH A LENGTH EQUAL TO 14 TIMES THE BOLT DIAMETER BUT NOT LESS THAN 18 INCHES. APPLY THE FULL EFFORT AS CLOSE TO THE END OF THE WRENCH AS POSSIBLE. PULL FIRMLY BY LEANING BACK AND USING ENTIRE BODY WEIGHT ON THE END OF THE WRENCH UNTIL THE NUT STOPS ROTATING. USE A MINIMUM OF TWO SEPARATE PASSES OF TIGHTENING. SEQUENCE THE TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL OF THE NUTS IN THAT PASS HAVE BEEN TIGHTENED.

6) TIGHTEN TOP NUTS TO SNUG TIGHT AS DESCRIBED FOR THE LEVELING NUTS.

7) MATCH-MARK THE TOP NUTS AND BASE PLATE USING PAINT, CRAYON, OR OTHER APPROVED MEANS TO PROVIDE A REFERENCE FOR DETERMINING THE RELATIVE ROTATION OF THE NUT AND BASE PLATE DURING TIGHTENING. USING A STRIKING OR HYDRAULIC WRENCH, FURTHER TIGHTEN THE TOP NUTS IN TWO PASSES AS LISTED IN THE FOLLOWING TABLE. USE A SEQUENCE OF TIGHTENING IN EACH PASS SO THAT THE NUT ON THE OPPOSITE SIDE, TO THE EXTENT POSSIBLE, WILL BE SUBSEQUENTLY TIGHTENED UNTIL ALL NUTS IN THAT PASS HAVE BEEN TURNED. DO NOT ROTATE THE LEVELING NUT DURING THE TOP NUT TIGHTENING.

| ANCHOR BOLT SIZE | FIRST PASS | SECOND PASS | TOTAL ROTATION |
|---|---|---|---|
| LESS THAN OR EQUAL TO $1\frac{1}{2}\Phi$" | 1/6 TURN | 1/6 TURN | 1/3 TURN |
| GREATER THAN $1\frac{1}{2}\Phi$" | 1/12 TURN | 1/12 TURN | 1/6 TURN |

8) LUBRICATE, PLACE AND TIGHTEN THE JAM NUTS TO SNUG TIGHT.

# DESIGN STRESSES:

DESIGN STRESSES FOR MATERIALS ARE IN ACCORDANCE WITH A.A.S.H.T.O STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGN, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 INCLUDING INTERMS UP TO 2006.

# STAINLESS STEEL U-BOLT NOTE:

UNLESS OTHERWISE NOTED ON THE PLAN, ALL STAINLESS STEEL U-BOLTS SHALL BE FURNISHED WITH STAINLESS STEEL REGULAR HEXAGONAL NUTS, JAM NUTS AND WASHERS UNDER BOTH HEADS AND NUTS. STAINLESS STEEL U-BOLTS SHALL MEET REQUIREMENTS OF ASTM A320, TYPE 304 OR ASTM F593 GROUP 1, 2, OR 3 CONDITION A.

# STEEL NOTES:

STEEL SHAPES FOR D.M.S. CONNECTION DETAIL SHALL COMPLY WITH ASTM A572 GRADE 50, ALL OTHER STEEL SHAPES SHALL MEET THE REQUIREMENTS OF ASTM A36. ALL STEEL BARS, AND PLATES SHALL COMPLY WITH ASTM A36 EXCEPT MINOR PARTS APPROVED BY THE ENGINEER MAY COMPLY WITH ASTM A575 GRADE M1020. THE METAL BAR GRATING INCLUDING BEARING BAR, CROSS BAR, AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2. ALL STEEL PIPE SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A53 GRADE B, TYPE E OR S. STAINLESS STEEL BOLTS SHALL COMPLY WITH ASTM A320 OR F592 AS PER STANDARD SPECIFICATIONS.

ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. PROVIDE VENT HOLES FOR GALVANIZING.

STEEL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE AWS SPECIFICATIONS D1.1, STRUCTURAL WELDING CODE-STEEL.

MAGNETIC PARTICLE TESTING SHALL BE PREFORMED ON THE POST TO BASE PLATE AND STIFFENER FILLET WELDS.

# SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, SERIES OF 2001 INCLUDING INTERMS UP TO 2006; STATE STANDARD FATIGUE DESIGN. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, THIRTEENTH EDTION.

CONSTRUCTION: IOWA D.O.T. STANDARD SPECIFICATIONS, SERIES 2001 PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

# GENERAL NOTES:

ALL TRUSSES ARE DESIGNED FOR 30 lb/ft$^2$ WIND PRESSURE ON TRUSS MEMBERS AND 40 lb/ft$^2$ ON DMS. THE DMS IS LIMITED TO 4000 LBS. AND A WIDTH OF 29'-3, A HEIGHT OF 7'-10, AND A DEPTH OF 3'-11.

ALL PIPES, SHAPES, AND PLATES SHALL BE STRUCTURAL STEEL COMPLYING WITH THE ASTM SPECIFICATIONS NOTED.

SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW.

SHOP DRAWINGS SHALL INDICATE LEFT AND RIGHT SUPPORTS.

THE PRECISE ALIGNING AND ERECTING OF ALL COMPONENTS OF THE OVERHEAD SIGN TRUSS AND ITS SUPPORTS SHALL BE CONSIDERED ESSENTIAL. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION TO THE ENGINEER SHOWING THAT THE VARIOUS COMPONENTS HAVE BEEN MEASURED AND ARE LOCATED WITHIN THE TOLERANCES LISTED BELOW.

FOUNDATIONS AND ANCHOR BOLTS:

1) EACH FOUNDATION SHALL BE ACCURATELY LOCATED, WITH THE CENTER OF THE TWO ANCHOR BOLT GROUPS NOT MORE THAN 1 INCH FROM THE PLAN LOCATION IN THE DIRECTION PARALLEL WITH AND PERPENDICULAR TO THE OVERHEAD TRUSS.

2) THE TWO FOUNDATIONS SHALL BE PARALLEL, WITH THE DISTANCES ALONG THE OVERHEAD TRUSS BETWEEN CENTERS OF FRONT AND REAR ANCHOR BOLT GROUPS DIFFERING BY NOT MORE THAN 1 INCH.

3) ELEVATIONS OF THE TOP OF EACH FOUNDATION SHALL BE WITHIN 1 INCH OF PLAN ELEVATION.

4) ANCHOR BOLT GROUPS SHALL BE LOCATED ACCURATELY BY TEMPLATE OR OTHER POSITIVE MEANS, WITH CENTERS OF ADJACENT ANCHOR BOLT GROUPS WITHIN $\frac{3}{16}$ INCH OF THE CORRECT DISTANCE APART.

5) ANCHOR BOLTS SHALL BE PLUMB WITHIN $\frac{1}{4}$ INCH PER FOOT FROM VERTICAL.

6) ANCHOR BOLTS SHALL PROJECT ABOVE TOP OF FOUNDATION WITHIN $\frac{1}{4}$ INCH OF THE PLAN DIMENSION.

7) WELDING OF ANCHOR BOLTS SHALL NOT BE ALLOWED. THE CONTRACTOR SHALL OBTAIN A TEMPLATE FROM THE MANUFACTURER / FABRICATOR FOR PROPER PLACEMENT OF THE ANCHOR BOLTS.

COMPLETED STEEL STRUCTURE:

1) EACH TRUSS SUPPORT COLUMN SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL IN TWO PERPENDICULAR DIRECTIONS.

2) STICK-OUT OF EACH TRUSS LOWER CHORD SHALL BE WITHIN $2\frac{3}{4}$ AND $5\frac{1}{2}$ INCHES MEASURED FROM OUTER U-BOLT TO INSIDE OF CHORD END PLATE.

3) THE TRUSS SHALL BE SQUARE WITHIN SUPPORTS. HORIZONTAL LINE BETWEEN CHORDS SHALL BE LEVEL WITHIN $\frac{1}{16}$ INCH PER FOOT OF HORIZONTAL, AND VERTICAL LINE BETWEEN CHORDS SHALL BE PLUMB WITHIN $\frac{1}{16}$ INCH PER FOOT OF VERTICAL.

## STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
James R. Hauber
18418
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

James Hauber — 2-23-2010
Signature — Date

James R. Hauber
Printed or Typed Name

My license renewal date is December 31, 2010

Pages or sheets covered by this seal: V.1 THRU V.10

DESIGN FOR

GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

GENERAL NOTES

STA. 143+00.00 — FEBRUARY, 2010

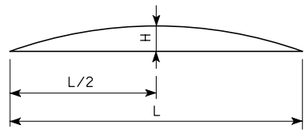
POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

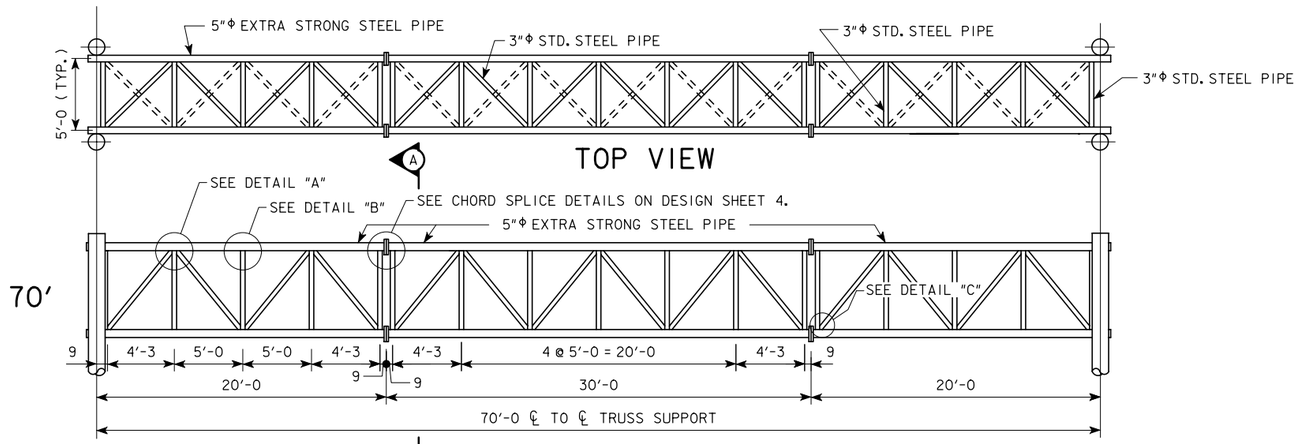
DESIGN SHEET NO. 1 OF 10 FILE NO. 30502 DESIGN NO. 1210

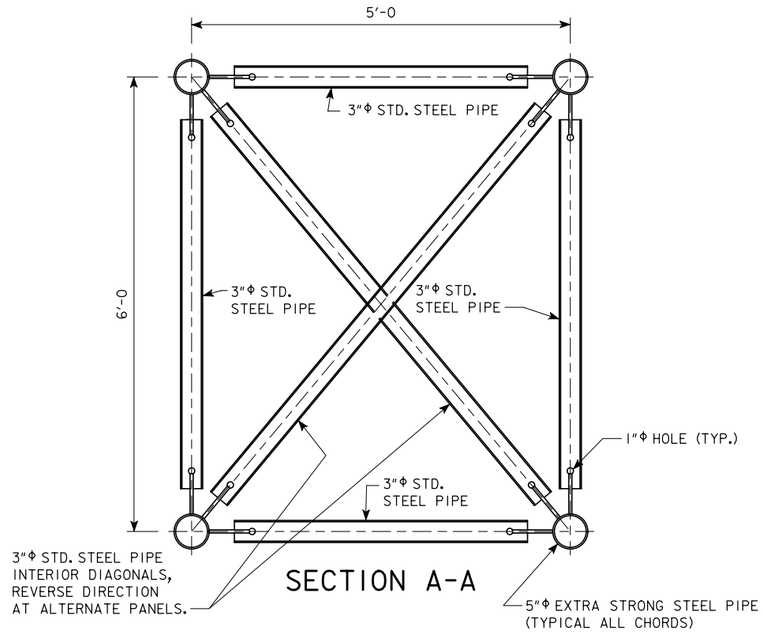
DESIGN TEAM JRH / JDC | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER V.1

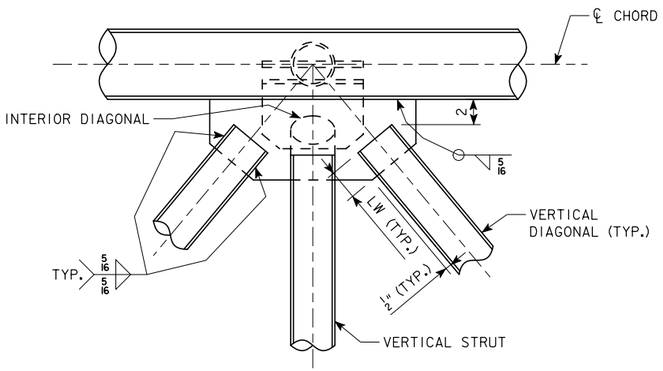
| SPAN L | CAMBER H |
|---|---|
| 70′ | $1\frac{3}{8}$ |



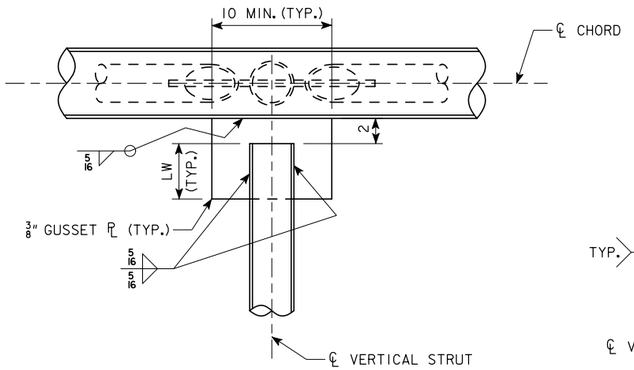

CAMBER DIAGRAM



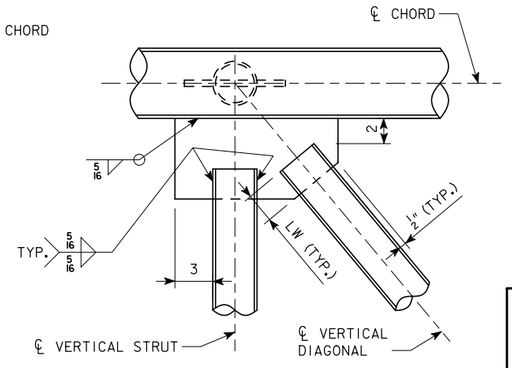




DETAIL "A"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"




DETAIL "B"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"




DETAIL "C"
FOR 3"Φ STD. STEEL PIPE
LW (MIN.) = $3\frac{1}{2}$"

DESIGN FOR
# GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

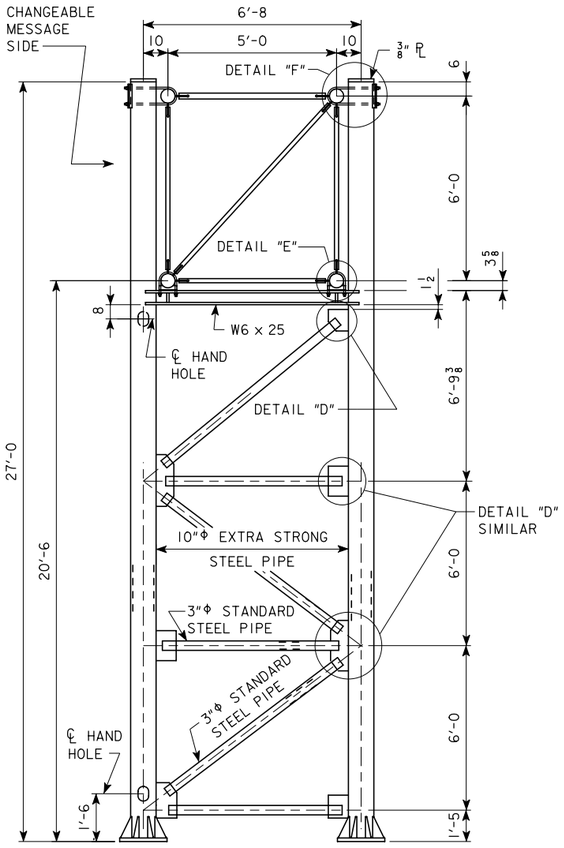
## ELEVATION VIEWS

STA. 143+00.00 FEBRUARY, 2010

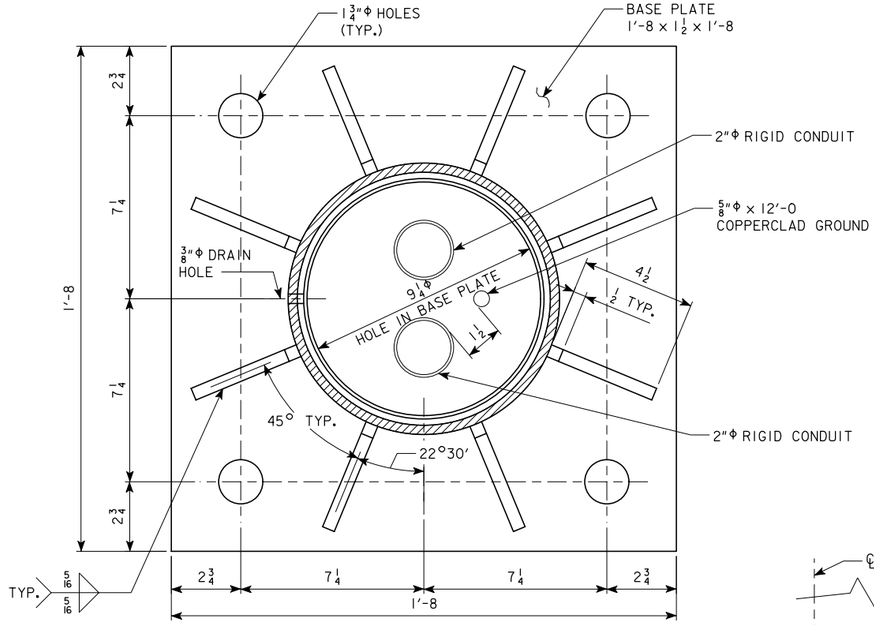
## POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

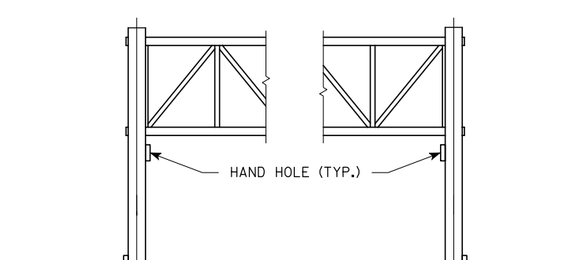
DESIGN SHEET NO. 2 OF 10 FILE NO. 30502 DESIGN NO. 1210




END VIEW OF TRUSS SUPPORT

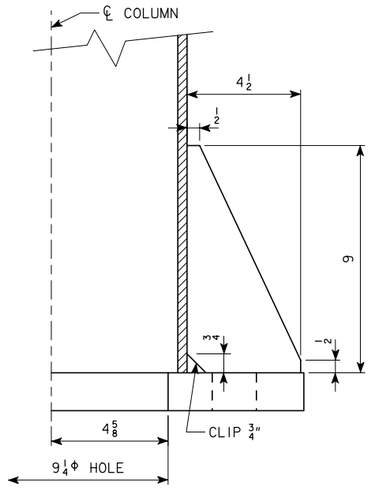



BASE PLATE PLAN

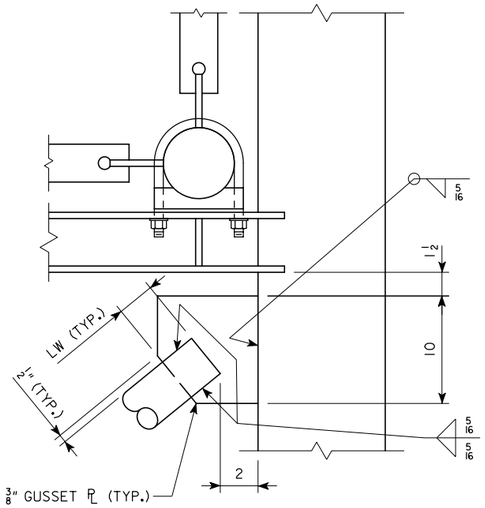



PART ELEVATION

NOTE: HAND HOLES SHALL BE IN BOTH END TRUSS SUPPORTS AND ON DYNAMIC MESSAGE SIDE ONLY.

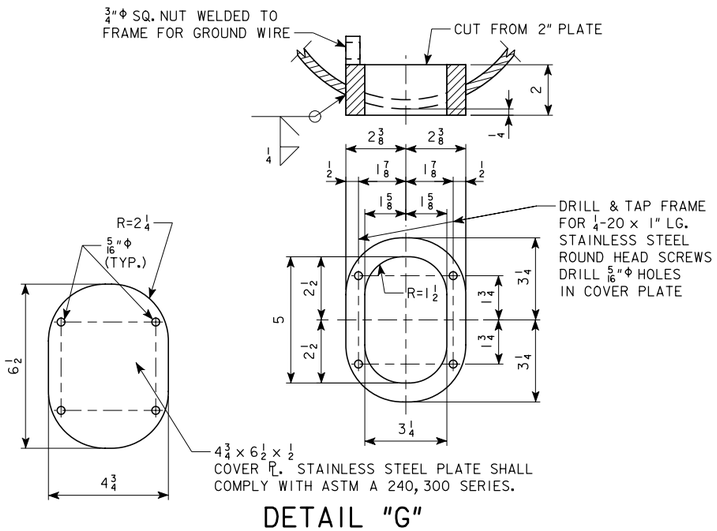



BASE CROSS-SECTION

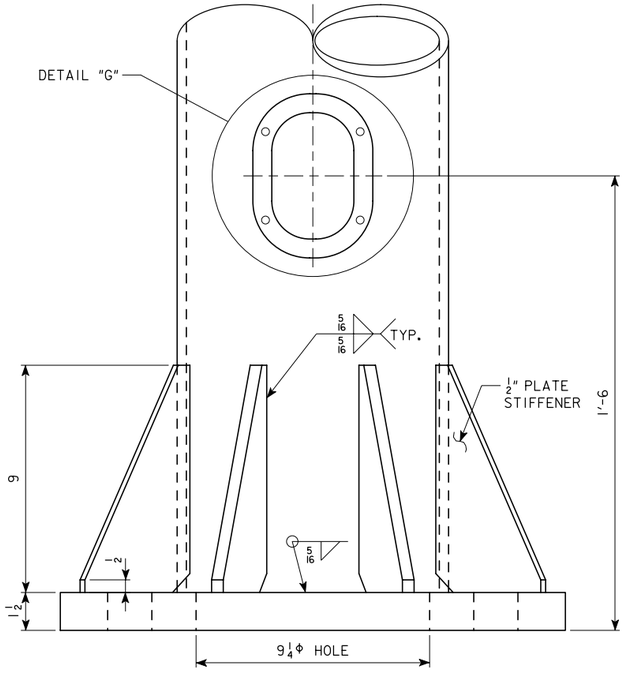



DETAIL "D"

FOR 3"Φ STD. STEEL PIPE LW (MIN.) = 3 1/2"




DETAIL "G"




BASE SIDE VIEW

NOTE: SEE DESIGN SHEET 4 FOR DETAILS "E" & "F".

DESIGN FOR

# GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

## BASE PLATE DETAILS

STA. 143+00.00 FEBRUARY, 2010

## POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 10 FILE NO. 30502 DESIGN NO. 1210

| DESIGN TEAM JRH / JDC | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER V.3 |
|---|---|---|---|

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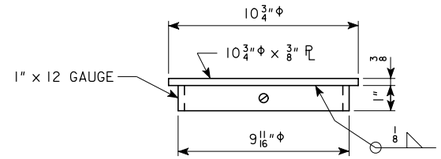
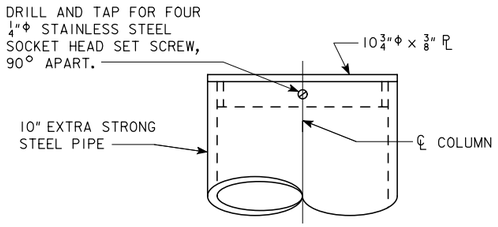
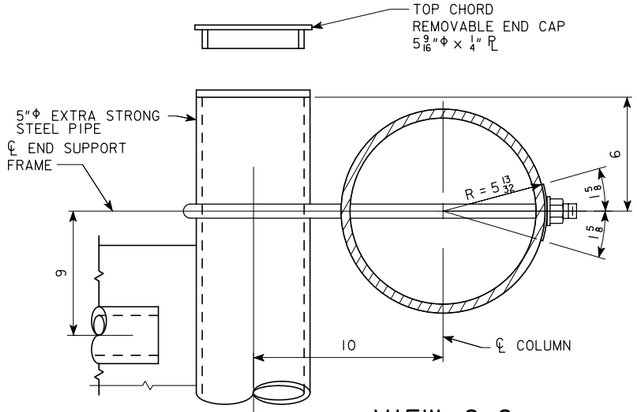
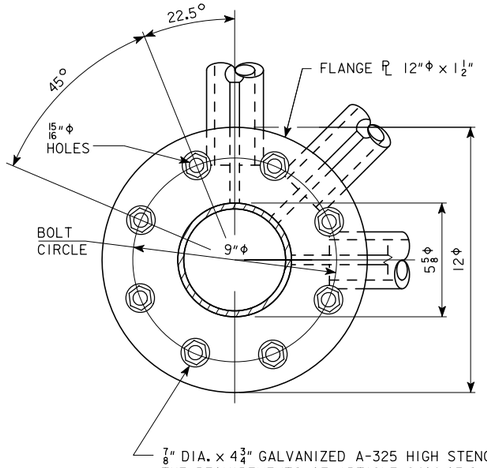


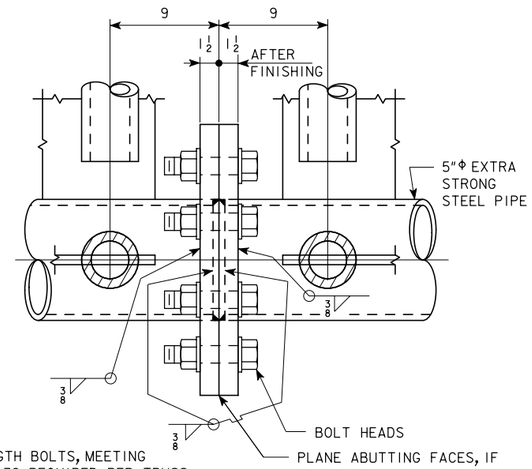




END COLUMN TOP DETAIL




VIEW C-C

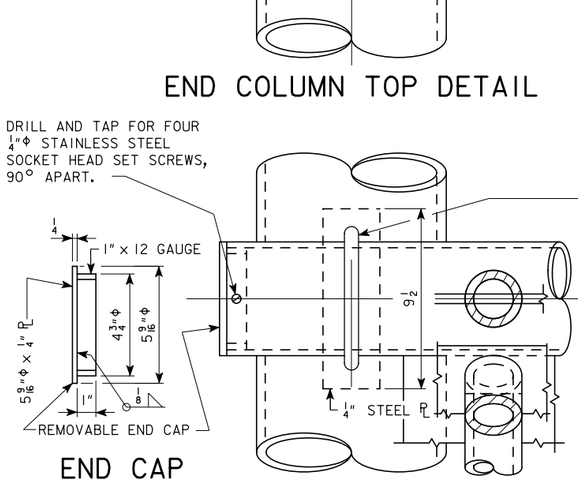



7/8" DIA. x 4 3/4" GALVANIZED A-325 HIGH STENGTH BOLTS, MEETING THE REQUIREMENTS OF ARTICLE 2408.03,S. 32 REQUIRED PER TRUSS SPLICE, 64 HARDENED WASHERS REQUIRED PER TRUSS SPLICE. HARDENED WASHER WILL BE PROVIDED UNDER BOTH HEAD AND NUT OF BOLT
32 - 7/8" DIA. HEAVY HEX NUTS REQUIRED PER TRUSS SPLICE. DRILL
8 - 15/16" DIA. HOLES IN EACH FLANGE. HIGH STRENGTH BOLT SHALL BE TENSIONED BY TURN-OF-NUT METHOD.

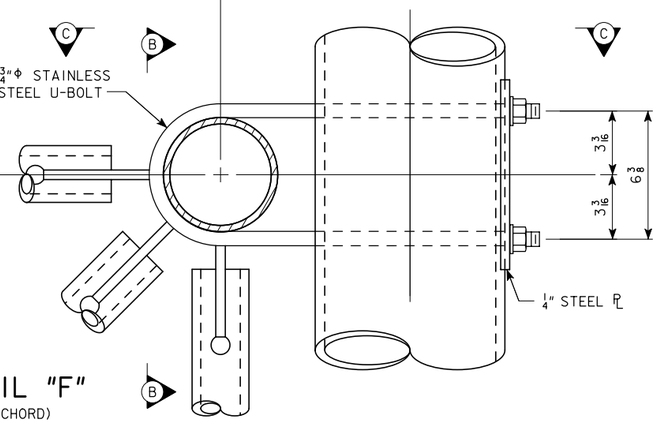
## CHORD SPLICE

NOTE:
FLANGES MAY BE WELDED TO CHORD MEMBERS AFTER FINISHING PROVIDED PROPER ALIGNMENT IS SECURED.

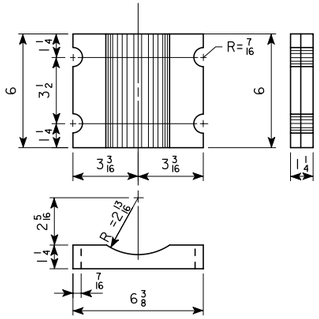



END CAP

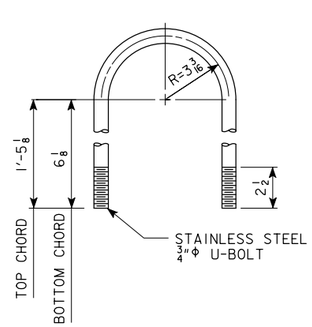
VIEW B-B



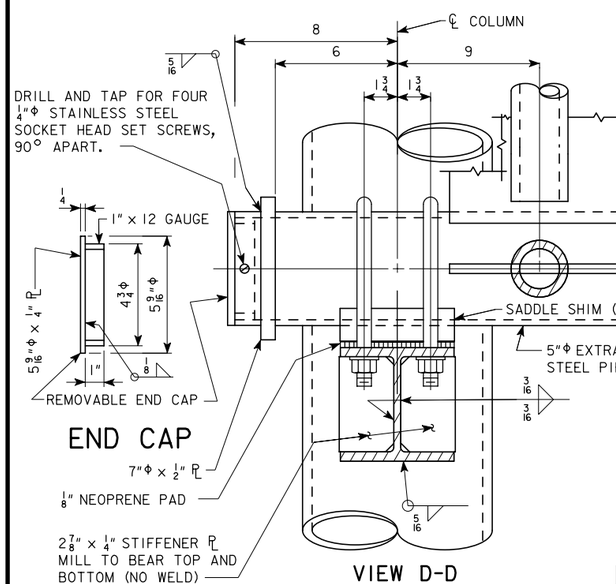

DETAIL "F"
(TOP CHORD)




SADDLE SHIM DETAIL

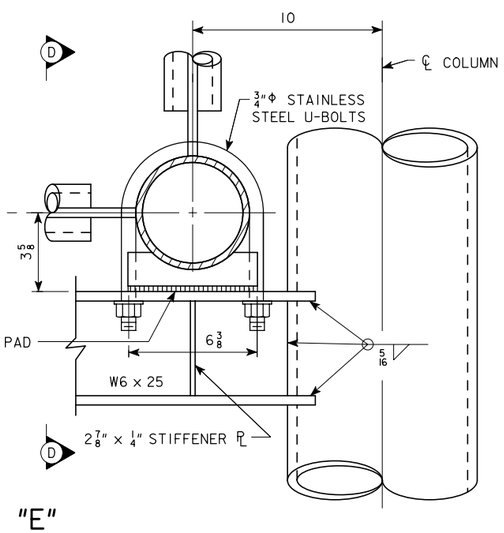



STAINLESS STEEL U-BOLT DETAIL




END CAP

VIEW D-D




DETAIL "E"
(BOTTOM CHORD)

NOTE: SEE DESIGN SHEET 3 FOR LOCATION OF DETAILS "E" & "F".

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

TRUSS SUPPORT & CHORD SPLICE DETAILS

STA. 143+00.00 FEBRUARY, 2010

POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 4 OF 10 FILE NO. 30502 DESIGN NO. 1210

DESIGN TEAM JRH / JDC | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER V.4

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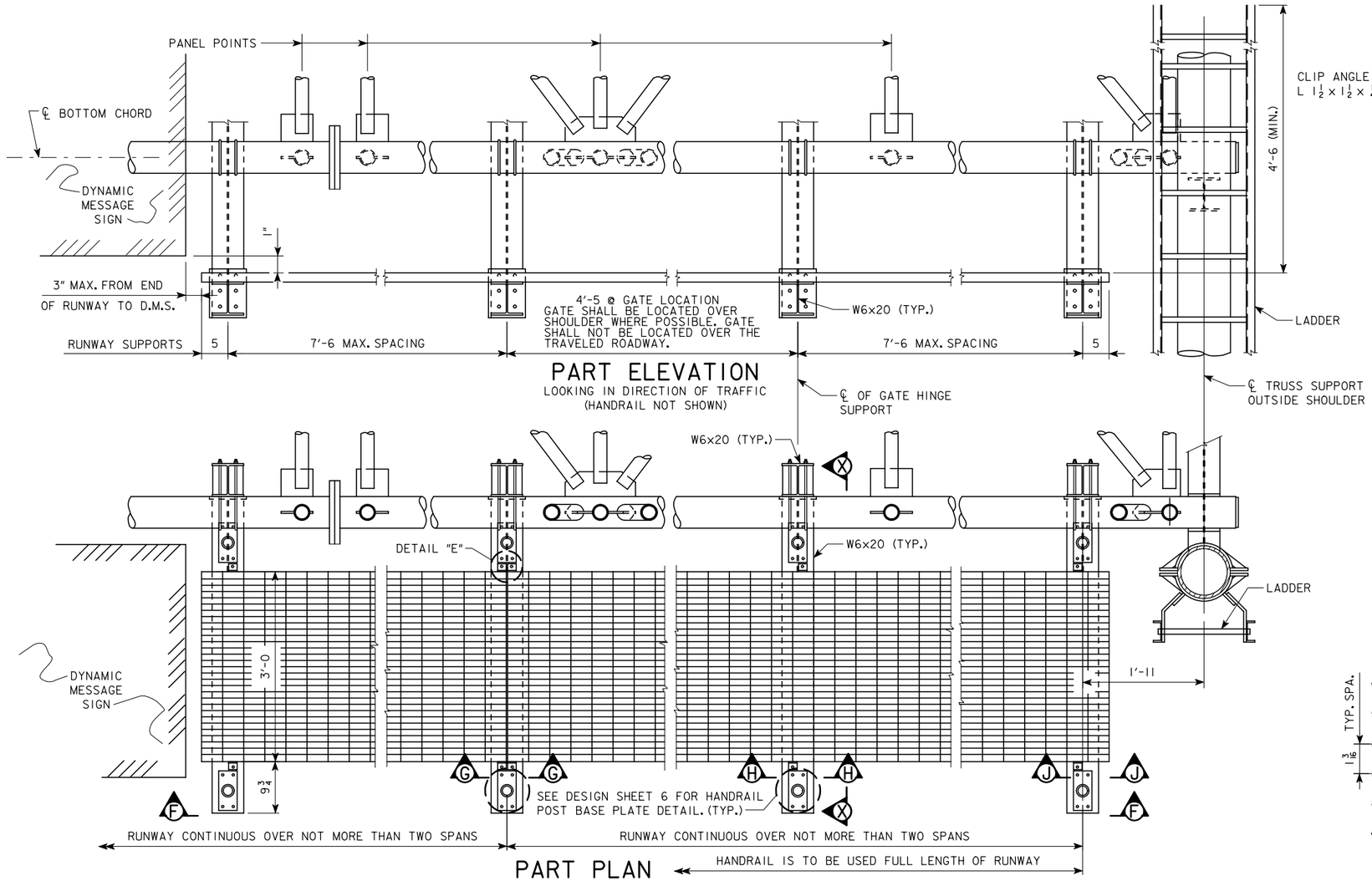
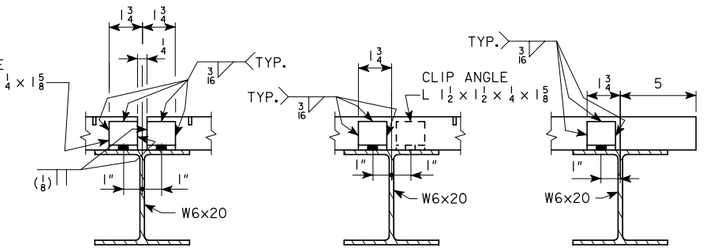



## PART ELEVATION

LOOKING IN DIRECTION OF TRAFFIC
(HANDRAIL NOT SHOWN)

## PART PLAN

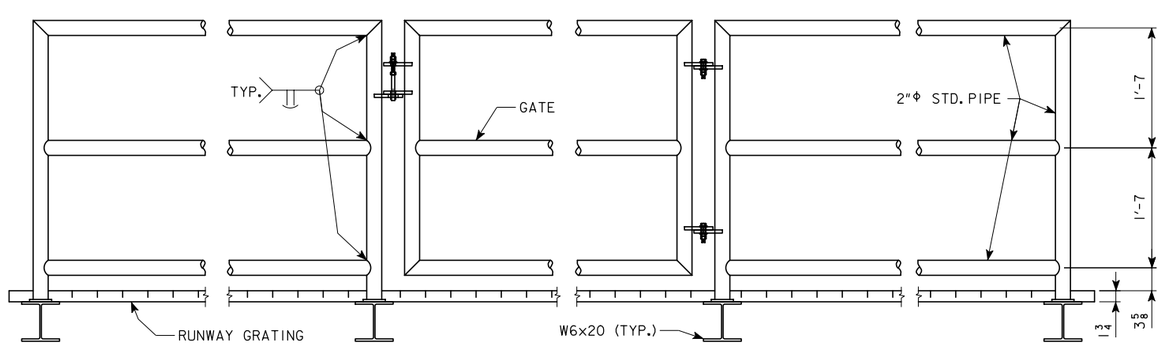
(HANDRAIL NOT SHOWN)




SECTION G-G SECTION H-H SECTION J-J

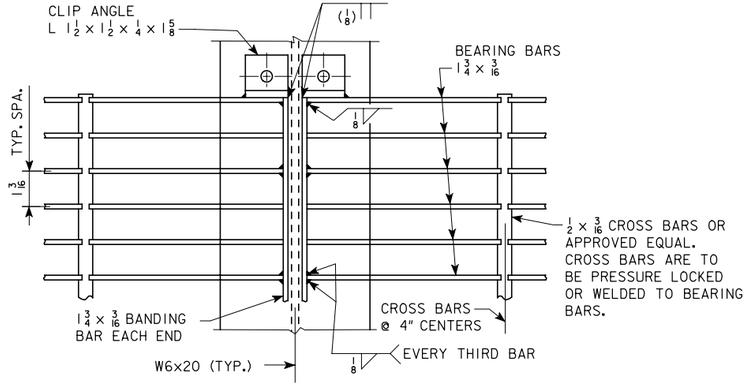
NOTE:
7/16"Φ HOLE IN CLIP ANGLE AND 7/16"Φ HOLE IN W6x20 FOR 3/8"Φ GALVANIZED A325 BOLT. ADJUST CLIP SO GRATING BEARS ON BEAM.

NOTE:
THE GALVANIZED METAL BAR GRATING INCLUDING BEARING BAR, CROSS BARS, AND BANDING BARS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM A1011 TYPE 2.




## VIEW F-F

(SHOWING HANDRAIL & GATE DETAILS)
(GATE IS LOCATED ON SIDE FARTHEST FROM TRUSS ONLY)




## DETAIL "E"

NOTES:
SEE DESIGN SHEET 6 FOR SECTION X-X.
SEE DESIGN SHEET 7 FOR LADDER DETAILS.

DESIGN FOR

# GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

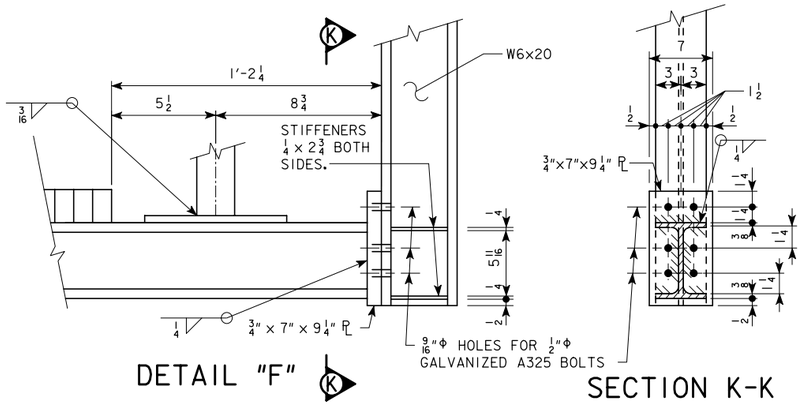
## RUNWAY DETAILS

STA. 143+00.00 FEBRUARY, 2010

## POTTAWATTAMIE COUNTY

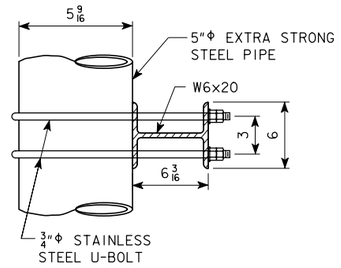
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 10 FILE NO. 30502 DESIGN NO. 1210

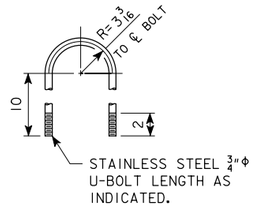



DETAIL "F"

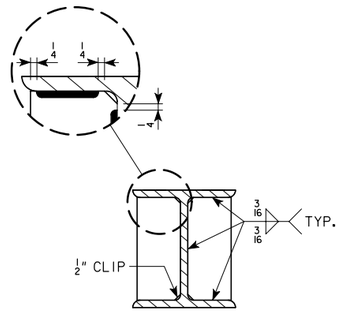
SECTION K-K



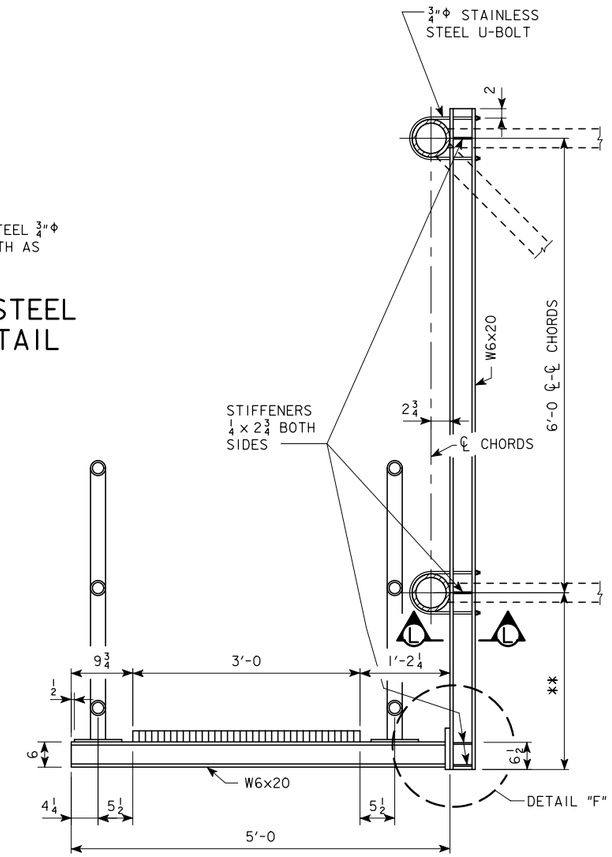

SECTION L-L




STAINLESS STEEL U-BOLT DETAIL

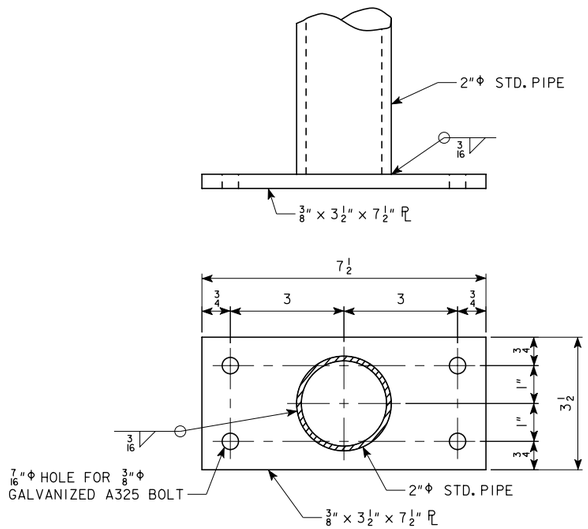



TYPICAL STIFFENER DETAIL

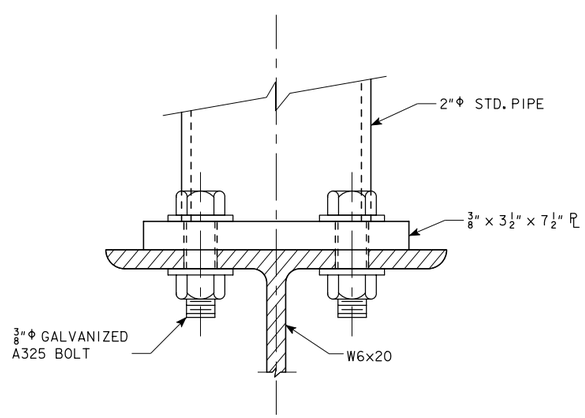



SECTION X-X
TYPICAL RUNWAY SECTION

** THE IOWA D.O.T. RESEARCH AND TECHNOLOGY BUREAU SHALL PROVIDE THIS DIMENSION AFTER YEAR 6 PURCHASE AGREEMENT FOR DYNAMIC MESSAGE SIGNS IS CONTRACTED AND ATTACHMENT HARDWARE DESIGNED. THE DIMENSION SHALL BE APPROVED BY THE IOWA D.O.T. OFFICE OF BRIDGES AND STRUCTURES.




HANDRAIL POST BASE PLATE




END ELEVATION OF HANDRAIL POST BASE

DESIGN FOR
GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

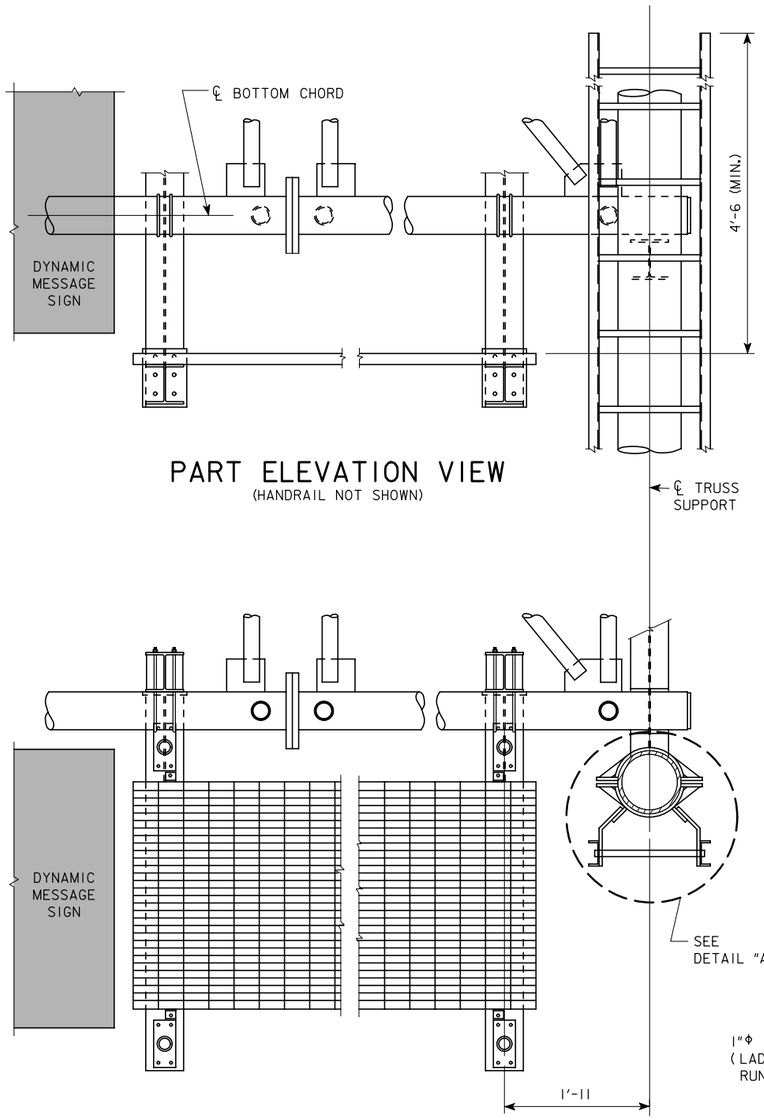
RUNWAY DETAILS

STA. 143+00.00 FEBRUARY, 2010

POTTAWATTAMIE COUNTY

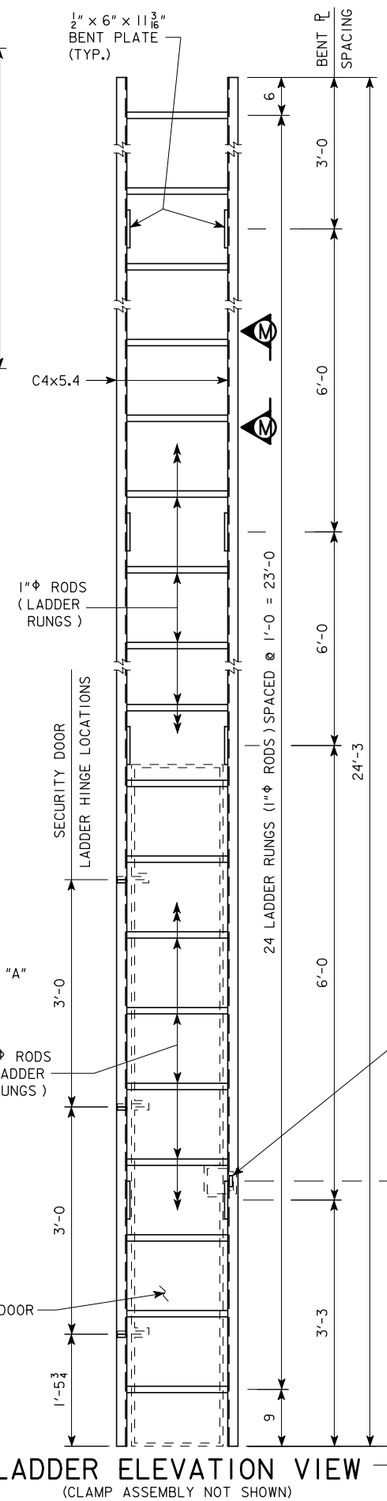
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 10 FILE NO. 30502 DESIGN NO. 1210

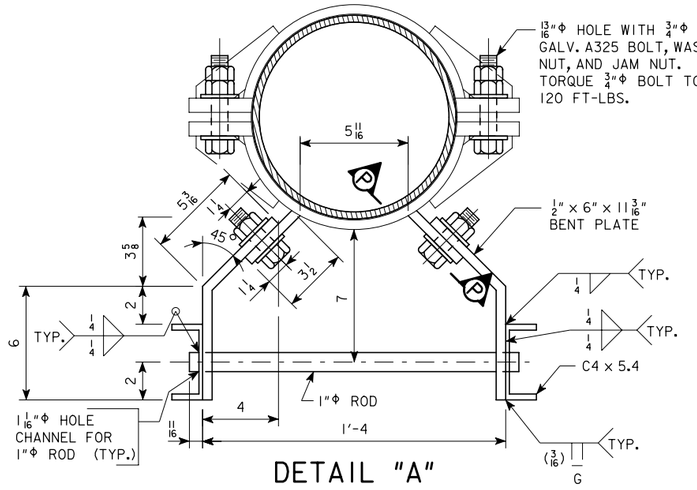



## PART ELEVATION VIEW
(HANDRAIL NOT SHOWN)

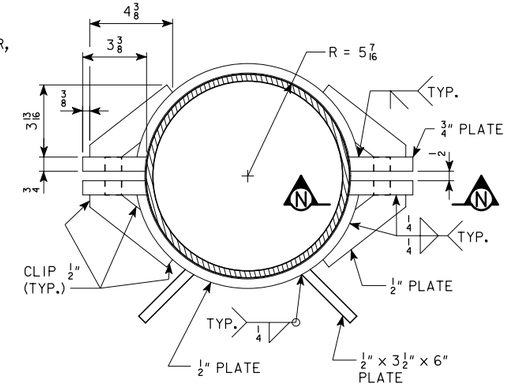
## PART PLAN VIEW
(HANDRAIL NOT SHOWN)



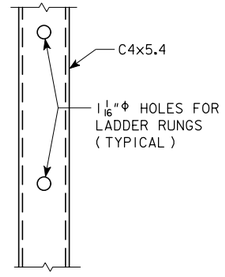

## LADDER ELEVATION VIEW
(CLAMP ASSEMBLY NOT SHOWN)



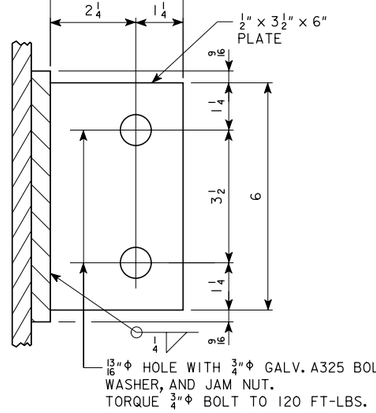

## DETAIL "A"



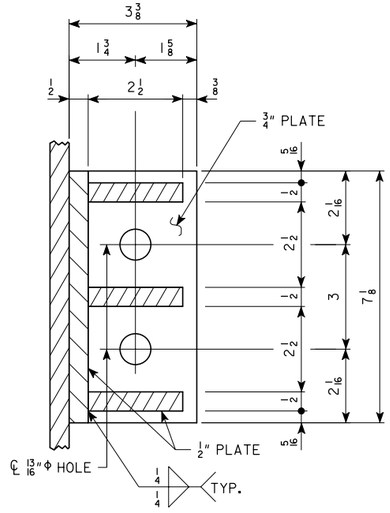

## CLAMP ASSEMBLY
(3 REQUIRED PER LADDER)




## VIEW M-M




## SECTION P-P




## SECTION N-N

NOTE: SEE DESIGN SHEET 8 FOR LADDER SECURITY DOOR DETAILS.

DESIGN FOR
# GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

## LADDER DETAILS

STA. 143+00.00 FEBRUARY, 2010

## POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 10 FILE NO. 30502 DESIGN NO. 1210

| DESIGN TEAM JRH / JDC | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER V.7 |
|---|---|---|---|

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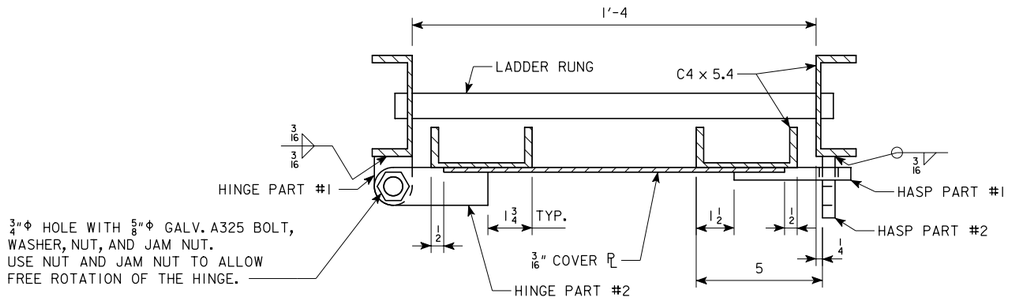
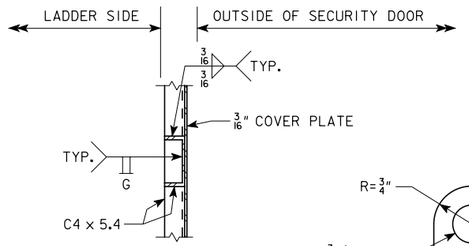
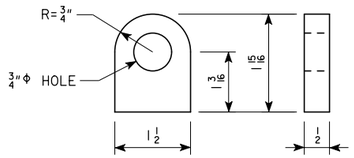


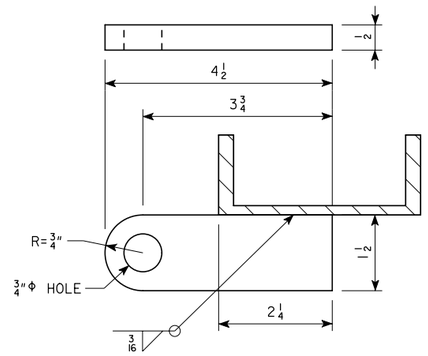

SECTION A-A



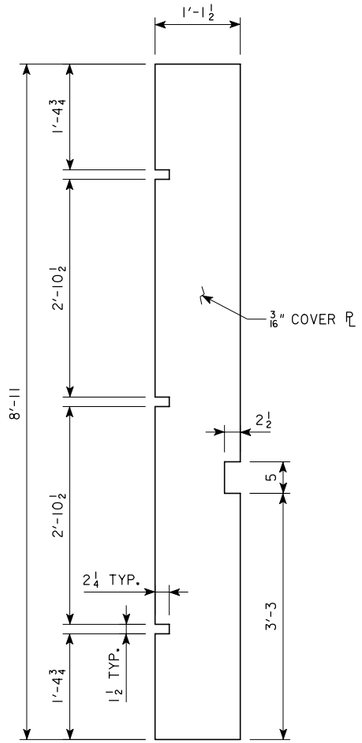

SECTION B-B



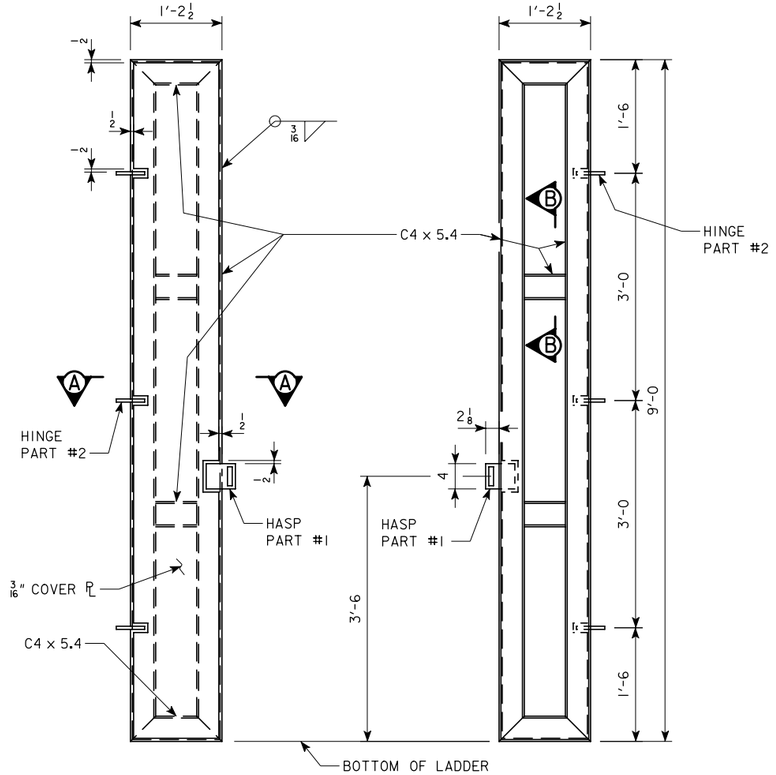

HINGE PART #1




HINGE PART #2



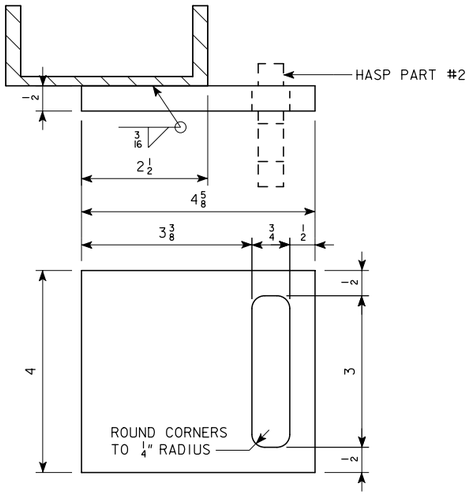

3/16" COVER PL DETAIL



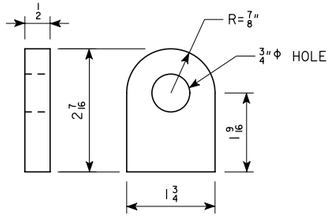

SECURITY DOOR ELEV.
FRONT SIDE OF DOOR




SECURITY DOOR ELEV.
BACK (LADDER) SIDE OF DOOR




HASP PART #1




HASP PART #2

DESIGN FOR

# GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

## LADDER SECURITY DOOR DETAILS

STA. 143+00.00 FEBRUARY, 2010

## POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 10 FILE NO. 30502 DESIGN NO. 1210

| DESIGN TEAM JRH / JDC | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER V.8 |
|---|---|---|---|

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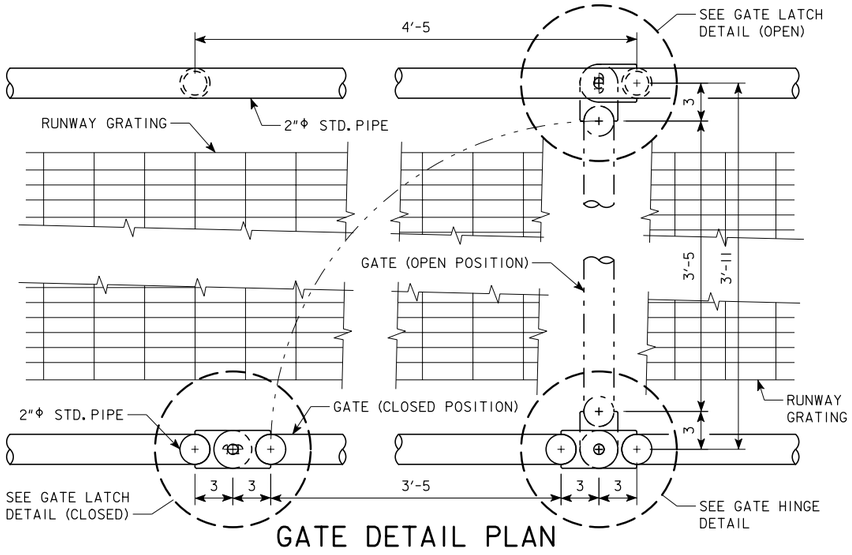
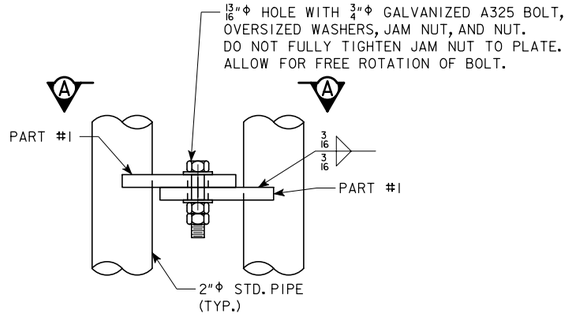
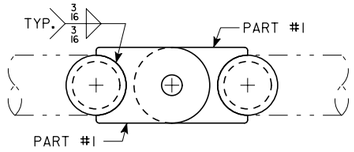


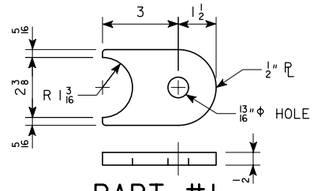

## GATE DETAIL PLAN



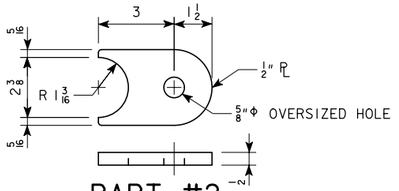

## GATE HINGE DETAIL



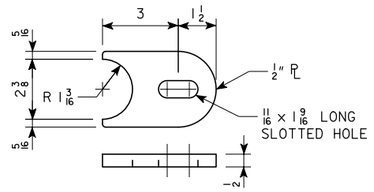

## VIEW A-A



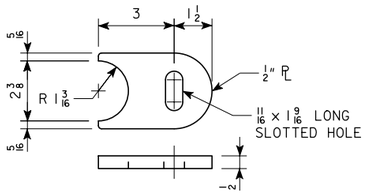

## PART #1



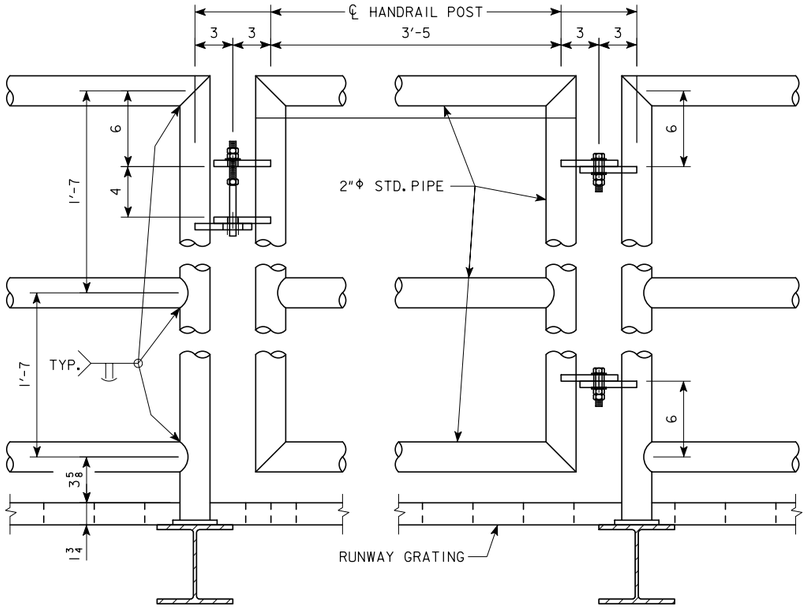

## PART #2




## PART #3

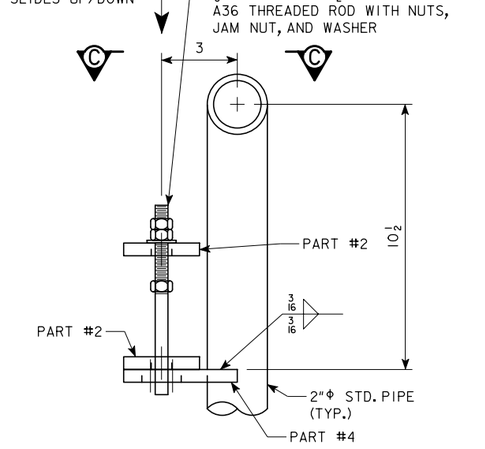



## PART #4

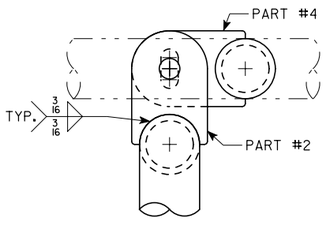



## GATE DETAIL ELEVATION

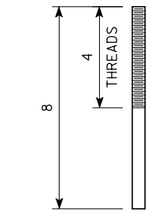
GATE LOCATED OVER
SHOULDER OF ROADWAY
AND OPENS TOWARDS LADDER



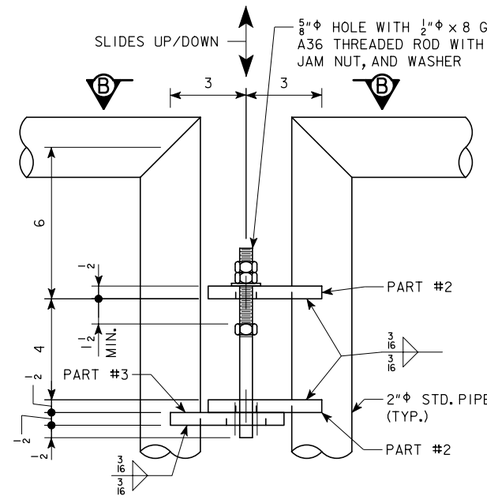

## GATE LATCH DETAIL (OPEN)



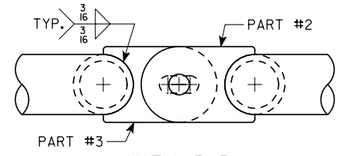

## VIEW C-C




## 1 1/2"Φ A36 ROD GALVANIZED




## GATE LATCH DETAIL (CLOSED)




## VIEW B-B

DESIGN FOR

# GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

## RUNWAY GATE DETAILS

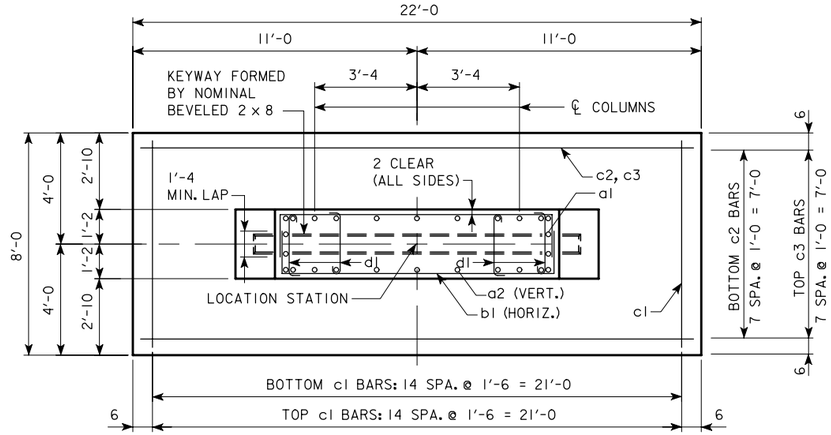
STA. 143+00.00 FEBRUARY, 2010

## POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

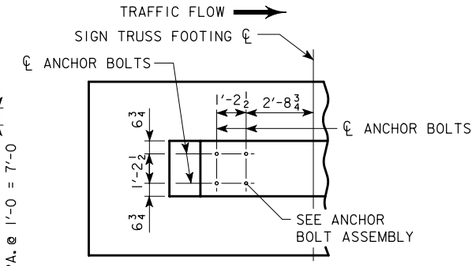
DESIGN SHEET NO. 9 OF 10 FILE NO. 30502 DESIGN NO. 1210

| DESIGN TEAM JRH / JDC | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER V.9 |
|---|---|---|---|

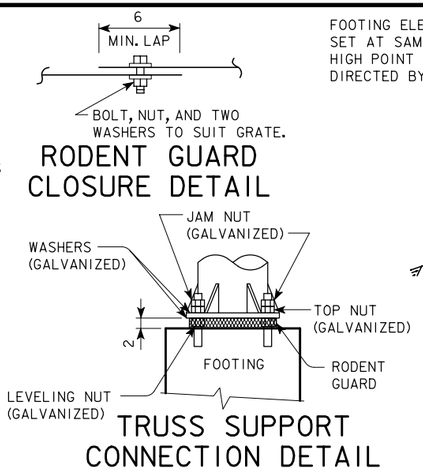



## PLAN

(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)

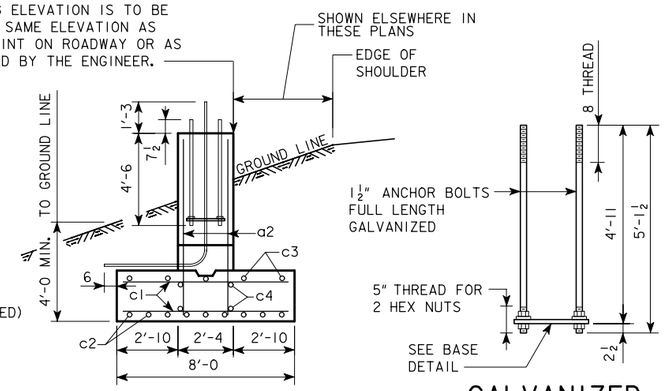



## ANCHOR BOLT PLACEMENT DETAILS



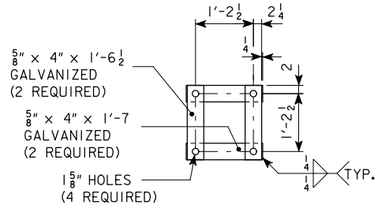

## RODENT GUARD CLOSURE DETAIL

## TRUSS SUPPORT CONNECTION DETAIL

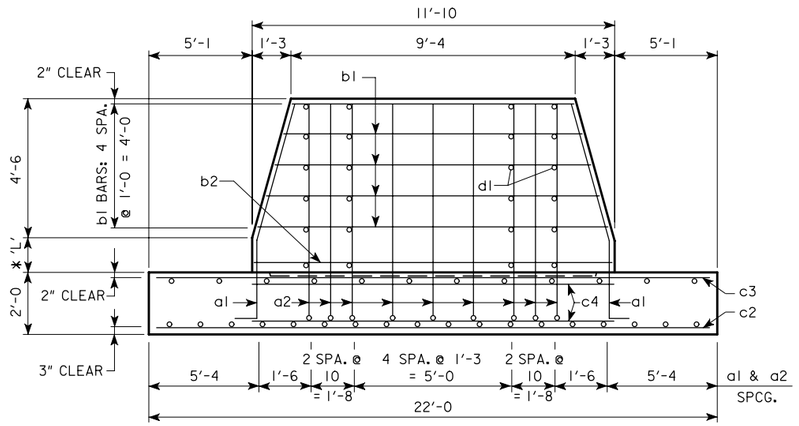



## END ELEVATION

## GALVANIZED ANCHOR BOLT ASSEMBLY




## GALVANIZED BASE DETAIL




## SIDE ELEVATION

(ANCHOR BOLT ASSEMBLIES NOT SHOWN.)

* 'L' SHALL NOT EXCEED 6'-0

## GENERAL NOTES:

STRUCTURAL CONCRETE, CLASS C, SHALL BE USED FOR THE FOOTING.

EXCAVATION FOR FOOTING SHALL BE TO NEAT LINES AND CONCRETE SHALL BE PLACED AGAINST THE UNDISTURBED MATERIAL. ALL EXCAVATION FOR THE FOOTING SHALL BE DISPOSED OF IN THE AREA ADJACENT TO THE FOOTING AND SHAPED TO NORMAL GROUND CONTOUR, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. MAXIMUM DESIGN BEARING CAPACITY IS 1.0 TONS PER SQUARE FOOT.

THE REQUIREMENTS PER FOOTING ARE TWO ANCHOR BOLT ASSEMBLIES INCLUDING SHIMS, NUTS (5 PER BOLT) AND WASHERS. REFER TO HARDWARE CLASSIFICATION TABLE FOR MATERIALS AND GALVANIZING REQUIREMENTS.

A RODENT GUARD SHALL BE PLACED BETWEEN THE CONCRETE FOOTING AND THE BASE PLATE, SEE MATERIALS I.M. 443.01.

PRICE BID FOR CONTRACT ITEMS SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY TO CONSTRUCT OVERHEAD SIGN FOOTING AS DETAILED HEREON. THE COST OF FURNISHING AND INSTALLING ANCHOR BOLT ASSEMBLIES, CONDUITS AND RODENT GUARD ARE TO BE INCLUDED IN THE UNIT PRICE BID FOR STRUCTURAL CONCRETE. CONTRACT ITEMS FOR OVERHEAD SIGN FOOTING CONSTRUCTION ARE:

- EPOXY COATED REINFORCING STEEL, POUNDS
- STRUCTURAL CONCRETE (MISCELLANEOUS), CUBIC YARDS
- EXCAVATION, CUBIC YARDS OF CLASS SPECIFIED

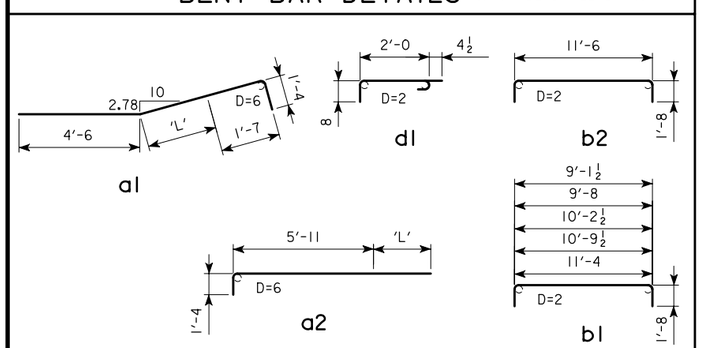
FOR FOOTINGS SUPPORTING SIGN TRUSSES WITH DYNAMIC MESSAGE SIGNS, PLACE 3/4" GROUND WIRE DUCT AND TWO 2" ACCESS DUCTS WITHIN THE ANCHOR BOLT CIRCLE CLOSEST TO THE DIRECTION OF THE APPROACHING TRAFFIC. EXTEND CONDUIT ENDS 6" PAST EDGE OF FOOTING ON SIDE AWAY FROM ROADWAY. LOCATION SHALL BE ON DETAIL PROJECT PLANS. ALL DUCTS SHALL MEET REQUIREMENTS FOR PLASTIC CONDUIT.

## CONCRETE PLACEMENT QUANTITIES

(ONE FOOTING)

| ITEM | 'L' = 0 | EACH 1'-0 OF 'L' |
|---|---|---|
| WALL | 4.12 | 1.02 |
| FOOTING | 13.04 | |
| TOTAL (C.Y.) | 17.16 | 1.02 |

## BENT BAR DETAILS (SHOP BEND ALL BARS)




NOTE: ALL DIMENSIONS SHOWN ARE OUT TO OUT. D = PIN DIAMETER.

## REINFORCING BAR LIST - EPOXY COATED

(ONE FOOTING)

| | SIZE | SHAPE | 'L' = 0 NO. | LENGTH | WEIGHT | SPACING | EACH 1'-0 OF 'L' NO. | LENGTH | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| a1 | 8 | | 8 | 7'-5 | 158 | SEE DETAIL | 8 | 1'-0 (A) | 21 |
| a2 | 8 | | 18 | 7'-3 | 348 | SEE DETAIL | 18 | 1'-0 (A) | 48 |
| b1 | 4 | | 10 | Varies | 91 | 1'-0 | --- | --- | --- |
| b2 | 4 | | --- | --- | --- | --- | 2 (B) | 14'-10 | 20 |
| c1 | 6 | | 30 | 7'-6 | 338 | 1'-6 | --- | --- | --- |
| c2 | 8 | | 8 | 21'-6 | 459 | 1'-0 | --- | --- | --- |
| c3 | 6 | | 8 | 21'-6 | 258 | 1'-0 | --- | --- | --- |
| c4 | 4 | | 4 | 11'-10 | 32 | SEE DETAIL | --- | --- | --- |
| d1 | 4 | | 20 | 3'-0 1/2 | 41 | SEE DETAIL | 4 (C) | 3'-0 1/2 | 8 |
| | | | | | TOTAL 1725 lbs | | | | TOTAL 97 lbs |

(A) ADDITIONAL LENGTH TO BAR a1 OR a2 FOR 'L' > 0

(B) TWO IN EACH 1'-0 OF 'L'.

(C) FOUR IN EACH 1'-0 OF 'L'.

DESIGN FOR

# GALVANIZED OVERHEAD SIGN TRUSS WITH GALVANIZED STEEL SUPPORTS

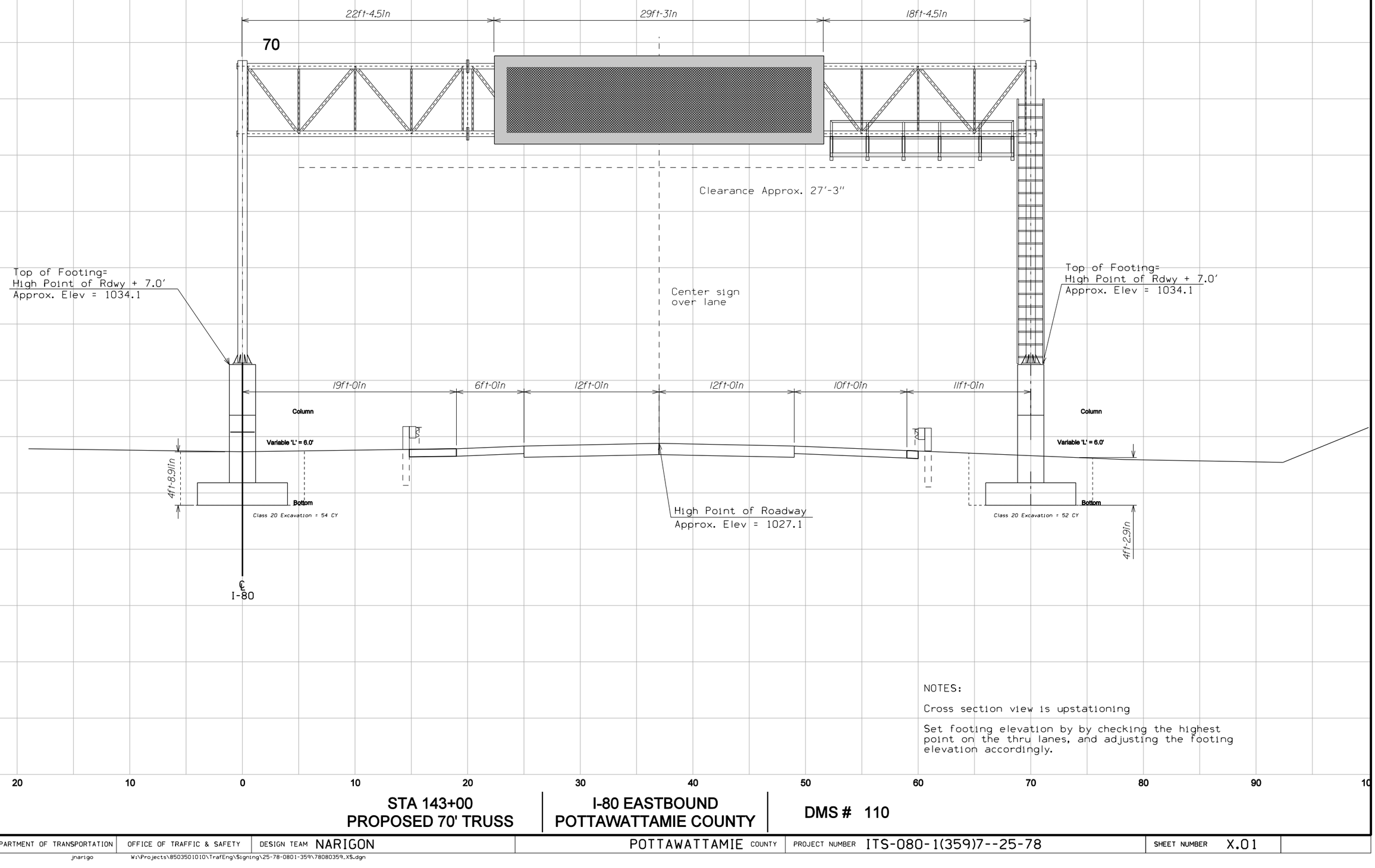
## FOOTING DETAILS

STA. 143+00.00 FEBRUARY, 2010

## POTTAWATTAMIE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 10 FILE NO. 30502 DESIGN NO. 1210




NOTES:

Cross section view is upstationing

Set footing elevation by by checking the highest point on the thru lanes, and adjusting the footing elevation accordingly.

**STA 143+00**
**PROPOSED 70' TRUSS**

**I-80 EASTBOUND**
**POTTAWATTAMIE COUNTY**

**DMS # 110**

| IOWA DEPARTMENT OF TRANSPORTATION | OFFICE OF TRAFFIC & SAFETY | DESIGN TEAM NARIGON | POTTAWATTAMIE COUNTY | PROJECT NUMBER ITS-080-1(359)7--25-78 | SHEET NUMBER X.01 |
|---|---|---|---|---|---|

5/4/2010 jnarigo W:\Projects\8503501010\TrafEng\Signing\25-78-0801-359\78080359_XS.dgn